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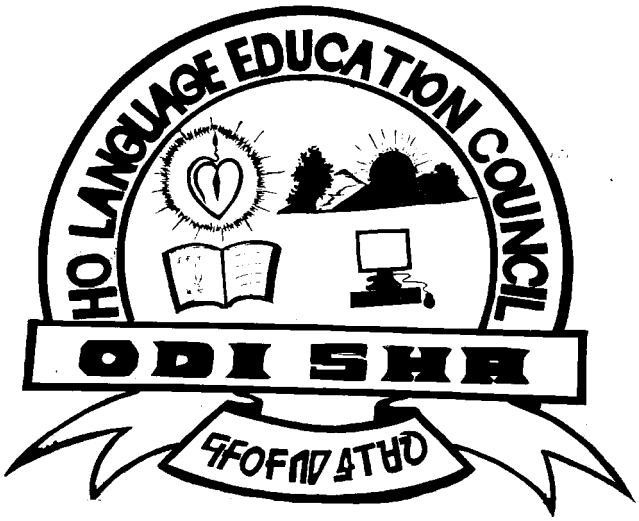
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PETE KA

Ai bara nw



Hoo Hzm Ppa f er Jumpulz, Odexa.

Thakurmunda.

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Ma[Anrxl - 2012

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Fv[ga - 50(brhese gvltka)

PREFACE

It is immense pleasure that ‘Ho’ Language Education Council, Odisha has published a General Science Text Book, prepared by the board of writers from Thakurmunda for the Class – VII students in ‘Warang Chiti’ script following the NCERT curriculum and frame work for the first time in the current academic session. Looking forward to the bare necessity of the ‘Ho’ language studied pupils, the topics like mater, its physical and chemical changes, chemical equations, molecule and atoms wool and shawl dress fiber components are selected in the prescribed Science Book. It might not be easily conceptualized to their understanding, the pupils as well as the teachers are not firmly co-related with the science oriented ‘Ho’ language text books before, but it is expected with a sure aspiration that it must be simple, understanding and fascinating gradually by the course of time.

Eventually the board of writers and editors have retranslated the English method science text book in to ‘Ho’ Language by dint to their reckless endeavor and devotion. Still any linguistic and spelling error found in the first experimental edition must be paid a special attention to manifest the noble aspiration behind it and trying our best effort to enrich at a global standard of science book for the pupils in future.

Padma Charan Haiburu
CHAIRMAN
Ho language Education, Council
Odisha.

HURR

Herla vzw apw ko!herla hga mexe ko ! nvn hoo hu f a ; la mla snm gune ko, be f ua ko ptua ko pndi ;e ko herla. Rseka r` k;ha kna f w ;vhvq hoo hu f a ; la mla rv ptua ko nw pu;e korvz` vsu y;arw goroj ar hza bza ko qvl k;v HOO HZM PPAFER JUMPUL Z,ODEXA thakurmunda rvn o;oll - f u\u rumpulz ko pz ;v svk\a gv ai bara nw noa PETEKA pu;e r` cergl anrxl NCERT ce Sorboxekhza obhejan,odexa o\[ ;v kosmpo\oa kvda. l ;uan gvza cebu odexa sorkar ma xerma hoo hzm kv bharo;ezo smbe f han rvz` 8ma ;onol rv nvn hzm kv ;ol mexz lgvd mu;ul sorkar ;` rv nvhra k f a. Ar odexa sorkar how sorbosekhza obhejan rv glw mexa k;v hoo hzm ptua koa` phm nwv` kurumutua kna. Vn lvka mozurbhoqj rvz` hon ypd kop ;epo f a,pqcopei\ pa rvz` cemezw sorkare mondo korv hoo hzm r` colon hoba svkh kna.Vn lvka ;v cergl jom bugeza ce, ime;w` behr sorkar msm; 197 5 rv rnce jumulz ar se[bui rvz` 14za mrw modo rv hoo hzm hbar[ce;e ;v p\ao` vtv` lvda.Nv br jzvrkawda sorkar how **kolhn jumulz**,cawv bsa rv hoo hzm hbar[ce;e rvz` p\ao ko` vtv`v loo`, y[k\u bara z ;v jumulz jkv r` p\ao ko ;ezr ;da . Nvn peteka pu;e guru / gurme ar ptua ko nw nma y;arw gvza ar peteka loo` pvtvka hzm ko abu lgvd nma gv f hra kn ;v phm korv holokoco ko hoba f iza,mvn f o y\e gu\e xu\e xulwvn rv svsvn rvz` svbv hoba lvnrv lhr ar sbar hobna. Ar f ax ce,bono\v` ar hzm smtao korv ;awv ko f o ;umblo` ca, lotom ko f o potomo` ca,ar hu f a svzw ar so f ore pa pv mohda k;v gled ko f o bu ika sre ;a rv f o bvtn ;n anrxl korv pucu` ;ulue ko f o ol ;ol mulee gvza

Kaira Singh Bandia
Secretary, Ho Language Education Council,Odisha.

GLW SKM

: .a.	Bexz	atl awka
1.	Ma[ct` GENE I X	6
2.	Fosr ct` B{GA AR ABGABONOFOL	3 0
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4.	Ypun ct` BURMVV : V LEJ~	5 5
5	Mo]v ct` JE I D	6 7

*****

Ma[ct`
GENE I X

1.1 **Re;a ar ho\ b\ui geneix-**

Jao rv abu kute mule korv rokom rokom geneix kobu nvlv ;na.Vna ko rvz` goroj ar forkr o\[ bu rkz ;na.Xhn, f`a, kuila(hsawgarr),k f an geneix,hasa vmn gorojo` re;a geneix ko ;na.Ka nvlo` mvn f o vsu rvna gorojn re;a geneix f o **hozo** ;na.Sbvn ime;a hozobu szvd a f vrvza.Hozo bvgr ka jejeda.Nvna ko bgv k;v ondo` gv vsu pur` geneix ko mvn` okona ce ho\ b\uiz`` ;na. Abu sbvn lej`,bvla ;]e,nwom,nuywi;vz`,rvvd h\a,cax p itekorv vmv;n bexe myra,bo f ar,p lastek,kgojo, g\emotor vman` ko ho\b\uiz` geneix ko ;na.

PHMV PV-



Okon geneix ko abubu jomv ;na,nui ;na,;olvn ;na,okona ko abu ol p\ao ,inu[korvbu agui ;na,okon oa` korv bu ;in ;na,vna loo` abu kute mule rv mvn` sbvn` gv mepezd geneix ko ;na.Vna ko ;ra f o re;a ar mra f o ho\ b\uiz`` ;na.

APV NW KRU I D - 1.1

Oa` rv ar bhr rv apv nvlv ;n gvlvza geneix r` numulvka bi pv.Vn be;arvv ;v okona re;a ar okona ho\b\uiz`` ;na slz pv.L ;ar p\a kv apvz` onol pu;e rv bie pv.Bara guru keq loo` jgr mule k;v goroj o\[;v[omv pv.

Re;a ar ho\b\ui geneix

Re;a geneix	**ho\ b\ui geneix**
Xhn	tu[gepta
Hasa	ita
_____	_____
_____	_____
_____	_____
_____	_____

1.2 GENEIX RVZ~ GUYN

Apv nw kruid-1.2

([) Mezd fere agui pv,vna hmbl gv a fao` ;nace? Mezd kco c[ga rv f`a agu k;v,c[ga kundm pa rv f`a joka ;v onol ;a pv. Fere kv suaz ;v vn c[ga rv dburz pv.C[ga f`a celeka zna?F`a ju f e pir rkb zna vn f o cvn` rvz`?p i rv zna,mr y\u`i pv?

(g) Hu\e[-mrw ;vz` apeza ypuneza kco bo;ol nm hundei pv. Bo;ol mu;ed meme c[ga f`a f ul a f vr ;a pv. Bo;ol mu;ed f`a ko nvlv pv. Meme c[ga f`a bo;ol korv ceka ;v medgv ka nvlo` ;na.

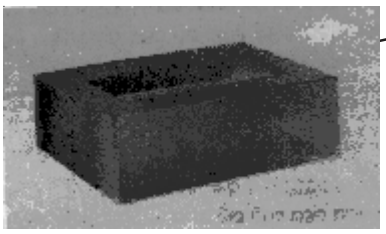
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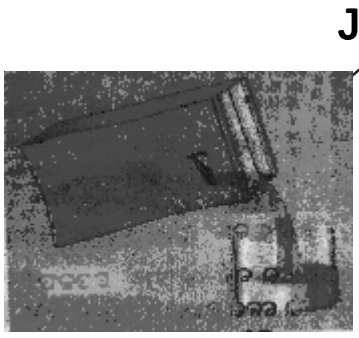
([) rv mvn` f ere rvz` vnvsvr mvn`,mvn f o(g) rv mvn` f`a rvz` jv;n vnvsvr gv bno` a`.

KONO~-1

Mu;ud jta(f uypu)z ;v oll ;n mowo`,hozo,aperg\e rvz` mowo` rvz' jan vnvsvr mvn` ce?nvna koz ;v apv okon spah;e[rvpv mnda kvda. (k)cv;n (g)rv agua kn sma bo;ol rvz` ojon cergalv pv.Vna cnb vn bo;ol rv f`a f ul k;v mexa ojon lvka pv.Naw` f o nvn bareza ojon ken mexa cemen aga bareza kna cerga lv pv.Naw` f o celeka pv atkar kvda?

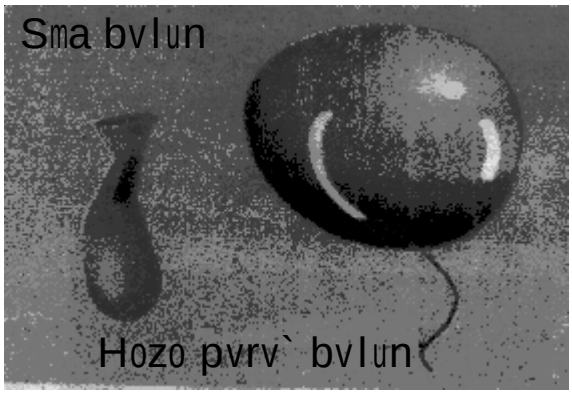


Pte-1.1 ita



pte-1.2 joo rse pokvt

Ita mezd kvtv` geneix * Joo rse mezd jomv geneix
Nvna rvz` vnvsvr ar * vna rvz` ;najo mvn`
;najo mvn. * Vnvsvr rvz jokabnoa.



Apv nw kruid - 1. 3

Mezd pulao(bvlun) ar mezd su;m ;v be\yz pv. Hozo rvz` ojon mvna,vna guru keq loo` ;v cergalv pv. Pulao be;ar rv bvlun lvka gv hu\e[mrw bina.

Pte - 1. 3 (bareza hu\e[mrw bvlun) hozo mezd oz[geneix, nvna rv mezd vnvsvr ar ;najo ka tina.

Cv;n be\y korv y fuba kn fere, fa, c[ga, pulao, hozo vmn sbvn mepezd geneix ko ;na. Cvn` ce nvna ko rvz` ojon, vnvsvr ar tnazvd mvn`. Hozo mvd ;v kbu nvdlmv ;n rvzo gv vna mezd geneix ;na. Hozo bu cergal f iz`.

KONO~ - 2
Lolo, mrxl, hwgar, mobilphon, ar x\eko geneix ;n ace? Vn be;arvv ;v geneix ko slz pv, ar apvz` hnl hl i\e[v pv.

KONO~ - 3

Jp` rv f o kav nvlo` a` Sbeirv kav sbo` a`.
Kurkuro` rv f o`, rpudvza, Kjeipvza okoz ;n`?

1. 3 GENE I X R~ ROKOM LVKA -

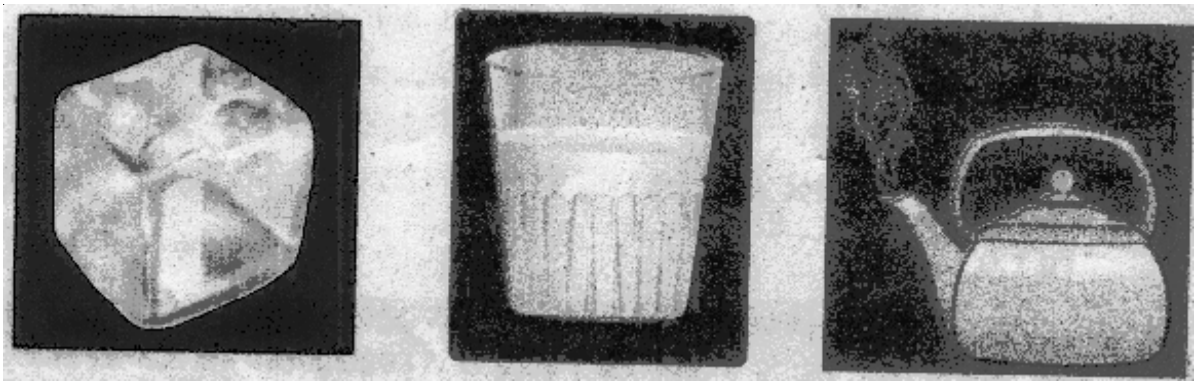
Apv nw kruid - 1.4

Mezd kco c[garv mezd r;w dvla bu reka ;apv.Cemezw hg\e cnab vn r;w dvla cn` cekao ;na bu nvlvza?C[garv naw` fo hundeza kn ;vz` geneix ;orw fo cvn` hoba f iza?Vn jol kv mezd steil karv alumenezm genarv i f e k;v lolo lvka pv cvn` hobao` a`,nvlvpv? Cemezw gh\e cnab vn gena cv;n rv mezd ; ] e ;v hrub ;a pv, ar sv[gvl ob ;a pv. Gena ar ; ] e rvza zn cnab ; ] e ot` k;v nvlvpv. :] e l;ar pa rv cvn` ko juleza kna? Nvlvka hnarub rvz` l;ar rv f `a juleza kn lvka ondo` okon korv pv nvla nace? Vna apvz` onol pu;e rv olvpv.

R;w celeka zna pv nvl kvd gvza.Kvtv` r;w svr k;v okon geneix bi zna vna fo f `a gv ;na.Cvn` ce f `a z ;vgv r;w bizo` a`.R;w f `a rvz` kvtv` lvka ar f `a fo jol lvka ;na.Jol lolo kvvrv vnz ;v ymbz olla pv nvlakda.Vna fo f `a rvz` oz[lvka ;na. Ymbz yxezm ceme;a rvza zna ,;] e l;ar pa rv juleza kna jol(poz[) lvka hesb ;v.Nvl kvda cebu kvtv` r;w svr k;v f `a bizo` a`.Poz[lolo kvvrv ymbz k;v oz[lvka rv plta na.Ondo` vn ymbz kv rvza ire kv rv f `a nm ruao` a`.Vn poz[kv kv\v` rvza;u;ukun ice kv rv (phrej rv vmvrv) celekao` a` nvlvpv.

Apv nw kruid - 1. 5

Mezd mohm dvla agu k;v, mezd stel karv alumenezm genarv lolozpv. Cvn` cvn` hobao` ;na olrekz pv. Apv bara rvn guru / gurme ar ju\e kolo` ;v lvckomv pv.



Pte -1.4 r;wdvla, pte-1.5 c[ga f`a, pte-1.6 bpaokvtle.

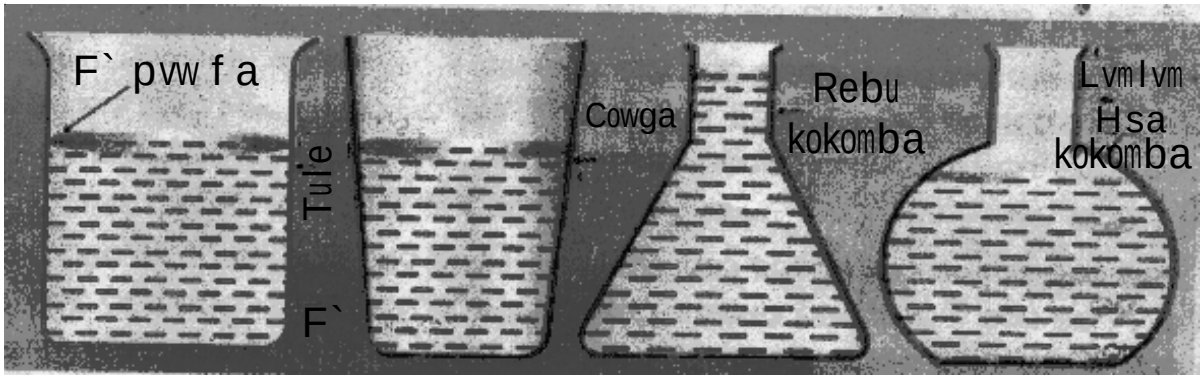
Mu;ed geneix r`aapeza lvka mvn`,jvmon-([)kvtv` (koz[) (g)jol (poz[) ar (k) jul (oz[). Geneix komezd lvkz ;vondo` mezd lvka ;vbo folo` ;vz` fo,vna rvz` b[ga bono fol komv;`.Neme;w fo geneix r` cemezw b[ga guyn koo bo folo` a`. Geneix rvokon lvka rvokon guyn ko ;ina tutuka ;vbu jgarvza vla. -

([)**geneix r` kvtv`(koz[) lvka**, -

Nvn lvka rv geneix r` vnvsvr,tnazd ar gene` tina. Nvna jarv vmv rvzogv tzvdv` vsvrvza. Ondo` gv cemezw nvlvkn geneix ko r` ynu fub vmv pv.

(g) **Geneix r` jol(poz[) lvka-**

Nvlvka rv geneix rvz` ;najo ar gene` ;ina mvn fo vnvsvr ka ;ina.Nvna ja ;` rv vmv rvzo cemezw tzvdv` vsvrv gvza. Jvmon me puy` dezw fo vn puy` rvz` vnsvr lvkagv hobana. F`a lolo z fepelwo vnka gv f`a lolokvn degexe rvz` lvka vnvsvr tikvna.Apv nvlan vt` ynu fub ko so forvpv.



Pte-1.7 ypuneza kco doa` rv f `a rvz` joka

Nvn ;` rv nvlv ;vz` kje ce, jol geneix ko f o sbvn ime;a doa` korvgv jogao f izo` a`. Ar vn jol(poz[) kv okon doa` rv vmo` a` vna, vnrvz` lvka gv vnvsvrv` biza.

Apv nvln gvza ce, joron lohr ko buru gvna cv;a nvv ;v l;ar ;vgv h\ena.Vn lvka g\a f `a koo gv. Jazla(d[gol)korv '' f ` bn f e(twke) f olan cv;a nvv ;v h\e k;v pvtvr(tvp) rv oll''. Cvn` ce geneix ko jol(poz[) lvka rv sbvn ime;a l;ar ;vgv h\ena.Naw` f o, oa` rv f okn rv f `a,;oa, sunum ko celekako vm ;a` nvl cergalvpv.

(k)**Geneix r` jul(oz[) lvka-** Nvlvkarv geneix r` jv;n mezd vnvsvr,;naj ka t\ena,mvn f o gene` ;ina.Joka no` lolo ar ono;a hoba lvn rv nvna r` vnvsvr o f ol bo f olvna. Je f an, otw, nitrojvn vmn f o jul(oz[) geneix ko ;na. Apv ondo` cemezw lvka numu ko ol ondo`z pv.Jul geneix ko f o sbvn ime;a vsvd doa` rvgv vmo` a`.Jul geneix okon vsbd doa` rv vmo` a` vn vsvd doa` gota ne;er bezurvna. Oz[geneix pur` ce kom ar vsvd doa` hu\eq ce

mrw rvz` jan bono f ol gv bno` a`.Mezd ot` bo;ol rv mu;ud jta jul a f vr k;v o l l ruaz pv.Bo;ol ;ubed vsvd ;a pv.Atakrvzapv bo;ol gota vn mowo` ne;era kno` a`. Naw` kje pv ce ;ubed oco` kvvrv cvn` hobao` a`.

Atakrv bugena -

Iesen jul(oz[) ar hsap;al rv steil twkerv(bn f erv) mvn` je f an,jul ceme;w kv\v` o;a kno` a`,ime;w f o jol lvka ;v ;iza kno` a`.Rvgulvtor ;v ceme;w twke ko ne` o` a`,ime;a hozo pe\e ono;a ;v ondo` gv oz[lvka ruana.

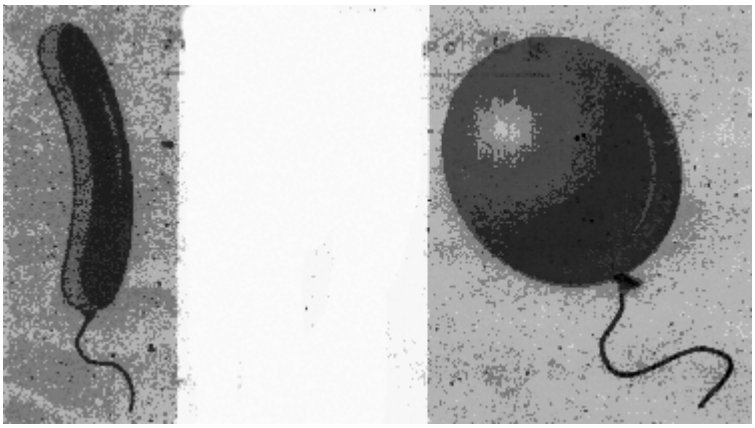
Hozo pe\e rv mvn` je f an oz[ lvka rvgv ;iza kno` a`.Cvn` ce hozo pe\e rvz` lolo rvza ar ono;a rv nvna mezd oz[ geneix biza kno` a`.

Apv nw kruid - 1. 6

Hu\e[mrw kco bo;ol agui pv.Mezd dulge ;v sbvn bo;ol rv somn f `a f ulv pv.F`a somn gv f ula kn rvzo gv bo;ol ko hu\e[mrw gv;v ;ra pur` ;ra hu\e[ gv nvlo` ;na.Vn mrw bo;ol rv f o pur` ar hu\e[ bo;ol rv f o kom gv` ;najoz ;na.

Vn bo;ol korvz` f `a f ul a;om ;a pv.Mepezd sedtepen ko vn bo;ol be;r rv kqju ;a pv.Sedtepen rvz` vnvsvr, tnazvd,;najo korv jan bo f ol gv bno` a`.Apeza bo;ol rvz` vnvsvr ar ;najo ;v jv;n bo f ol ka hobn ;na.

Bo;ol be;arvv ;v sedtepen ko o l l v\` ;a pv.Jul ;n mu;ud jta apeza ypuneza mexa ;v med rped lgvd bo;ol rv a f vr k;v o l l rua ;a pv. Cnab f o bo;ol ;ubed rua ;a pv.Bo;ol be;r rvz` mowo` celekao ;na nvlv pv.



Jele[bvlun Duyl bvlun

Pte-1.8
hu\e[mrw pulao ken Bvlun be;r hozo nvna jul ;n hesb ;v gota mule ne;ervna.

Mowo` okon bo;ol rv tin ;na,vn bo;ol gota ne;ervn ;na ar vn bo;ol r` vnvsvr gv` i f ei;na. :ubed oco` kvvrv bo;olv ;v mowo` oll v\` ;na. Cv;n no;or be\y rv sedtepen, f `a ar mowo` kv apv kpv lolo lvda.Vna ;v vn pnite f epelw f o lolo rvza vnka gv tikvna.
Nvn be\y mucd rv geneix rvz` rokom rokom lvka rv rokom rokom guyn bu ata kr kvda.Vna ko f o nvlvka-

* S f z'` lolo rvza rv kvtv`(koz[) geneix(nvn;` rv sedtepen) rvz` vnvsvr,tnzvd ar ;naj rv jv;n bono f ol gv kahobana.
* S f z'` lolo rvza rv jol geneixe( f `a) rvz` ;najo ka bo f olvna mvn f o, vnvsvr ar tnzvd f o doa` ce bo;ol lvka gv reka na.
* S f z'` lolo rvza rv jul geneix( f uypu mowo`) rvz` tnzvd,;naj, ar vnvsvr f o bo;ol rvz` vnvsvr,tnzvd,;najo lvka gv hoba na.
* Poz[geneix rekz lged mezd doa` r` goroj mvn`.Vna ot` karv ;ubed / vsvd hoba f iza,cvn` ce jol f o,cv;a nvv ;v l;r ;vgv h\ena.
* Oz[geneix ko f o sbvn ime;a vsvd doa' rvgv vm f izo' a'.Karv oz[otw k;v hozo rv lvzwvna.

1.4 - Geneix r` apeza s f z'` lvka rv o f ol bo f ol (inter-conversion)-

Geneix rvz` o f ol bo f ol bexz l ;ar bara rvbu p\aoa kda. Lolo rvz` joor ;v kvtv` geneix ko svr k;v jol (poz[) lvka na. Vn lvka jol geneix kv lolo kvv rv jul (oz[) geneix nmo` a`.

Oz[geneix kv rvza kvv rv,vna jol lvka bi yrana. Ar jol ;vz` rvza la` kvvrv ondo` gv kvtv'(koz[) yrana.

Geneix rvz` vn apeza lvkz ;v mezadvv ;v ondo` mezd ;v bo f olo` ;vz` f o **o f ol bo f ol** ko mv;`.

Kvtv` geneix	lolokvvrv*	jol geneix	lolo kvvrv*	jul geneix
	→ ←		→ ←	
	Rvza kvvrv		rvza kvvrv	

Ata karv bugena -

Ryrkvla steil hara rvz` blast phornvs (itull) lv ceme;w mvhd olla ime;w jol lvka ;vgv oll'`.

Lolo rvza bono f ol lvka ;v geneix rvz` apeza lvka rv o f ol bo f ol bexz ;v pv a f a kvda. Cemezw lolo rv r;w svr k;v f `a o` a`,vna f o f `a rvz` **svr awka** (**melting** point) ko mv;`. Nv p n i te f o **svnvrr** ko mv;`. Cemezw lolo rv f `a bo\okao ;v ymbz na, vna f `a rvz` **bo\okao awka** ko mv;`. F`a bo\okao` ;vz` p n i te f o **bno\okao** (boiling point) ko mv;`. Vn lvka gv cemen rvza rv f `a sked ka;v r;w bizo`a, vna f o f `a rvz` **;u;ukun awka** (freezing point) ko mv;`. Nvn f `a rvza p i te f o rvza **;u;ukun ko** mvnvza.

PHMV PV-



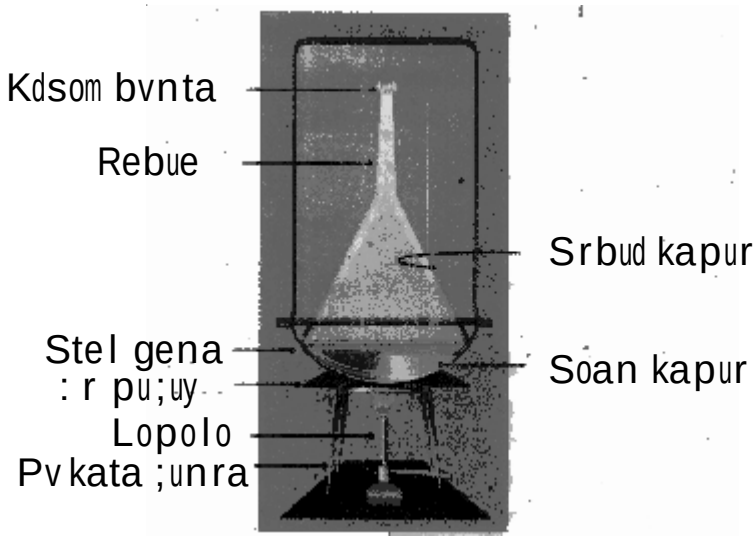
F`a kv lolo kvv ;v az` lolorvza 100°C (bno\okao) joka lolo kvvrv bo\okao k;v ymbz oz[rkaba. Bo\okao ka ;vroo,s f z'` lolo rvza rvzo f `a ymbz ysezm rkaba. Nvna f o ysezm hal ko mv;`. Ysezm ar ymbz p n i te rv jol f `az ;vgv hobana.

KONO~ - 4

Kpur,aizoden gule,amonezm klorid bulu[vmn kvtv` geneix kv cemezw gh\e lolo kvv rv cvn` hobao`a`?Vla bu be\y k;v bu nvl lvka`.

APV NW KRU ID 1.7 -

Cemezw np;halen gule(kpur) agipv . Vna ko gunda kvv ;v mezd stel gena rv vmv pv,Vn stel gena hrub vsvdo` lvkn mezd kocomba hrubv pv.Kdsom ;ulm o f d k;v vn kocomba suaz suaz ;v jodv pv.Naw` f o vn kocomba be;ar rv bizo` ;n lolo lvn ;vz` geneix rvzao` a`.Steil gena kv joka gh\e lolo k;v bgv ;a pv.Loloz ;n f epelw vn kocomba yndu hora ;v gena be;ar nvlvpv.Kvtv` np;halen svro` ;na ce?Gena rvza zn cnab kocomba f o a;om v\` ;a pv.Vn kocomba rv cvn` ko juleza kna?Vna f o jol ce kvtv` geneix ;na?Gena rv jv;n jol geneix ko mvn` ce?



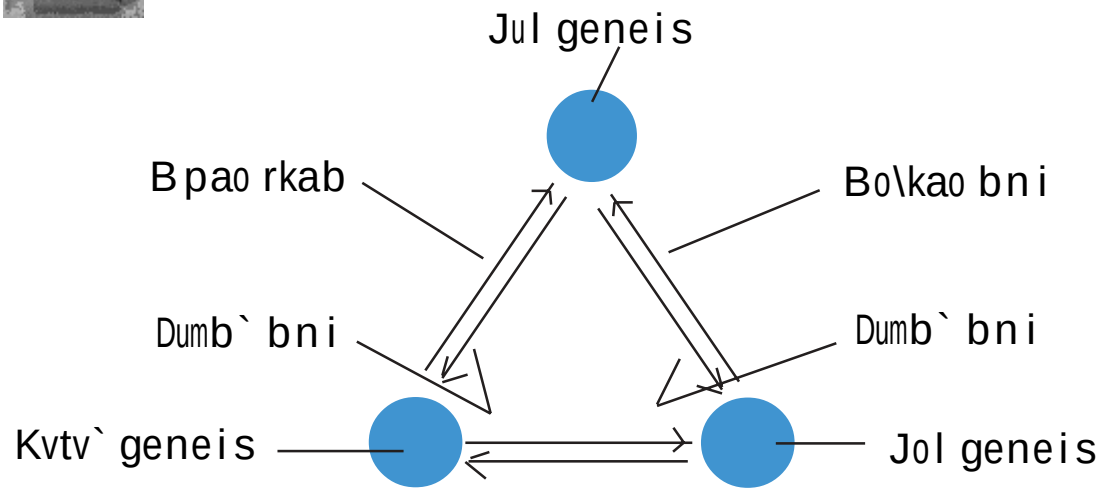
Pte - 1.9 BPAO(yr f ho p;ono)

Kvtv` np;halen gunda kv lolo kvd rvzo ka svr lvna.Kocomba be;ar pa rv jv;n jol geneix ko ka juleza kna.Vn tzvd mezd kvtv` geneix rvz` f opa jumwa kna.Soan k;vbu atkr f iz` ce nvna jv;n nma geneix f o ka ;na.Vna np;halen ymbz rvza k;v kvtv geneix lvka ;v sked ;keda kna.Nvkn pnite ko f o geneix rvz` **bpao** ko mv;`.

Ju f e pv nm f i ;n rv f o np;halen bo f ol ;v aizoden karv amonezm klorid i f e k;v vn be\y gv biyra z pv.Nvlvka cemezw kvtv` geneix ko mvn` okona ce,lolo kvv rv jol rv ka bo f ol k;v se f a oz[rvnah rv p lta na.Ar rvza zn rv f o poz[lvka jol rv ka bo f olvn ;v se f a ondo` gv kvtv` geneix biyra na.Nvkn kvtv` geneix ko f o mezd ;nga ;vz` kvtv` geneix ko ;na,nvna ko f o **pndel** kvtv` ko mv;`.



PHMV PV- Lolo,bo\okao,ymbz,rvza, bpaoo mezd b[ga bono f ol ;na.



Pte-1.10 (geneix r` s f z lvka rv o f ol bo f ol)

Vt` lvkn kvtv` geneix-

Cc` kgojo,bkal`,svrrlej`,cene vmn kvtv` geneix ko be\y t[g` rv i f e k;v loloz rv, vna ko sbvn lo ;orov cbao` a`.Nvn geneix be;ar rvz` mu;e korv abga bono f ol hobn ;n;v vna ko ka svr k;v loo ;orov zo` ;na vn loo mezd abga p n i te ;na.

1.4 GENE I X R~ BNI -

Mu;ed geneix ko cempezw mu;e ko;v biza kna.Nvn mu;e ko be;ar rv med rokom rpac` pv\v` tina.Mvn fo mezd geneix rvz` apeza lvka rv mu;e korvz` rpac` pv\v` soman ka ;ina.
Geneix r` mu;e ko be;ar joka lvka ko ;ina ar vn mu;eko mezd ;nga o\[ ;vko ;iza kno` a`.Cvn` ce geneix rvz` kvtv`, jol ar jul lvka rv mu;e ko rvz` rpac` pv\v` ;nga fpiza,vna ;v mu;e ko be;ar rvza rpac` pv\v` ;nga ;nga gvza.
Mu;e ko be;ar rvz` p[ka o\[ gv, rpac` pv\v` ipmo` ;v geneix koo,kvtv`,jol ar jul lvka ;v y fubvna.

APV NW KRUID-1.8

Apv azr ;vpv agua kd sedtepen, f`a ar ;ubed bo;ol be;r rv mvn` mowo` ko i fek;v vlabu be\y ondo` za.
*Bo;ol rv mvn` f`a ;ei;v sbv pv. Atakarv ;napv nvna sb fizo` gvza.
*Mu;ud jta` mowo` kv cemezw gh\e ;ei cepud rv rekz pv, vn cezw gh\e gv ;i k;v oll v\`na.
*Naw` fo cv;n no;or breza be\y k;v,sedtepen rvz` joka no` kvc` k;v ;eirv pv cepud fiz` ce?A fah nbu sedtepen kv cov ce bnde`i lgvd, mezd kotaxe forkara.

KONO~ - 5

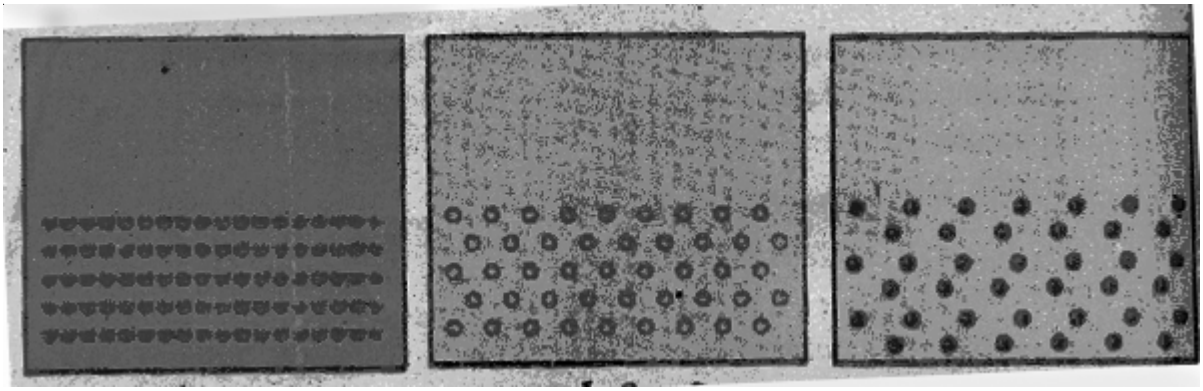
Sumw sedtepen rvgv,vna rvza ;ra kvc`z lgvd kotaxe forkr zna,cvn` rvz` kjeipv?

VLABU JGARVZA -
Geneix ko rvz` apeza lvkz ;v kvtv` lvka rv mu;e ko jp` jp` ko rvsvda kno` ;v p[ka ko kom gv ;ina, vna ;v mu;e korvz` rpac` pv\v` vsu kv\v`

gvza.Nvn kv\v` rpac` ;vgv mu;eko kv\v` ;vko ;pye i\e[a kno`a.Vna mvn;v (sedtepen) rvz`-

* : najo somn gvza.
* Vnvsvroo somn gvza.
* Joka cov no‘ oz lged kotaxe rvz‘ goroj hoba lvna.

Naw‘ fo nvn pte kv nvlvpv-



Kvtv` geneis Jol geneis Jul geneis

Kvtv` geneix rv mu;e ko jol geneix rv mu;eko jul geneix rv **mu;eko** (**Pte-1.11**)

Kvtv` geneixe ;v jol geneix( f`a) rv mu;e ko joka sap ne[rvkoa.Vna ;v ako be;ar rv rpac` pv\v` joka koma.Vna;v-

* F`a joka aqjuleirv aqja gv a;wo` a`.
* F`a rvz` nejon vnvsvr bno` a`.Vna doa` rvza vnvsvr lvka gv hobana.
* F`a cv;anvv ;v l;ar ;vgv h\eza.
* F`a mu;e ko med;` no` korv gvko ;iza kno` a`.
* Jul geneix (mu;ud jta) rvz` mu;e ko be;ar rv vsu sapne[ rvko ;v rpac` pv\v` vsu koma.Vna ;v mu;e ko fo-
* Jae jomor ;nga- fpi ko ;ina.
* Jul geneix doa`z ;v bhr ;v oll v\`a.
* Jul geneix vsvd doa` rvgv tina

1. 6 GENEIX KO RVZ~ BARA -

Geneix rvz` b[ga lvka(kvtv`,jol ar jul lvka) ;v apvv bara rv hte[a kna.Mvn fo geneix korvz` abga bni ynupn lvka ;v fo,muy\u, svll ar mexree rv hte[a kna.Mu;ed geneix rv hu\e[ hu\e[ mu;eko mvna kje azr ;vbu a fana.Okon geneix korv sumw medrokom mu;e kogv ;ina vna fo **nerla geneix** ko mv;`.Muy\u ar svll geneix korvzo nvlvkn mu;e kogv mvn`.Ondo` cemezw geneix mvn` okon rv vsu rokom mu;e ko mvn`a`.Cvn` ce nvna swge nerla geneix ko ko rvz` menexa ;na.Vna ;v nvlv kn geneix ko fo **mexree** ko mv;`.

APV NW KRU ID -1.9

Apv jao rv oa` rv,bhr rv,nvlv ;n , cergalv ;n cemezw geneix ko rvz` numu lvka bie pv.Vna koz ;v okona fo nerla,ar okona fo mexree geneix ;na vnk;v mezd p\a rv sjaoz pv.

: mba ;hr,xan,hsawgarr,celekn geneix mvn lvka pv afz ;na?p\a rv tnazvd ;a pv.

KONO~ - 6 .

I ;e[f`a nerla gvza ce? Apvz` hnl sare fetz pv.

Nvn p\a kv bara guru ken loo‘ pv jgar mulei rv nvn sapa;e[rvpv bvta na.

: mba fo ja cemen pv knde` knde`e rvzo vn ;mba gv olla vta fo ka nmo` a`.Vn lvka mvhd ,sona rupa,alumenezm,noll,kpur, otw,je fan, vmn` ko ja cemen svrr lupu`yi rvzo ce abga svrrv rvzo vt` fo kanmo` a`.Cvn` ce nvlvkn geneix ko fo mezd sumw geneix ;vgv biza kna.Vna ko ja;`z ;vbu agui rvzo vnka gv ;ina.Kje prkz rv bugena, ce, sona rv fo sonamu;e kogv ;ina, vnka rupa rv fo rupa mu;egv sumw ;ina. Nvlvkan mezd mu;e;v sumw biza kn nerla ;vz‘ geneix ko fo **muy\u** ko mv;`.S fz’` lolorvza rv noll,phosphoros,solphor,aizoden,sona,rupa,;mba,alumenezm,sexa vmn` fo kvtv` muy\u ko ;na.Morkzure ar bromen ken fo jol muy\u ;na,ar

otw,je f an,n i trojvn,kloren,helezm vmn f o jul muy\u ko;na. : ese[hb` ‘ : ’ rv 115 za muy\u ko nm ;da.Vna koz ;v 88za f o re;a ar vt` ko f o be\y o\` rvko bi ;da, ce ho\ b\ui mvno` ;na.Ho\b\ui ;vz` muy\u ko f o ka ;igh\e na.

**([) Muy\u rvz` rokom -** Muy\u ko akoa` guyn lvka ;v apvv bara rvko hte[a kna.Jvmonse;uad (metal) kase;uad (non-metal)ar hon se;uad (metalloid) ;na.Nvna koz ;v se;uad ko gv swgeza.

APV NW KRUID - 1.10

Mezd solphor ar ;mba ;hr knde` aguipv.Vn solphor kv f o kotaxe ;v ko\mv pv.Nvlv pv svrr cba zna.Vn lv ka ;mba ;hr kv kotaxe ;v ko\amv rv cvn` cekao` a` nvlvpv?

Nvlv zapv solphor f o gunda cbazna,mvn f o ;mba ;hr f o cbta no` zna.Solphor mezd kase;uad ar ;mba mezd se;uad ;na.Mv]vdv ;v ;hr ar doa` ko bizo` a`.Se;uad ;v hecer sv[gvl (electri) svsvna.Mezd ;mba ;hr kv ;ra pa itull rv ku\ub ;z ;v mra pa f o cpu ;a rv ;ei lolo a`.Lolo lunde` sma ;ei;v ka sb f izo`a`.Se;uad kv lolo z rv aqja ka lolo`a`. **Mvhd, sexa, alumenezm, sona, rupa,jewk, mgnvsezm, kvlsezm** vmn kvtv` se;uad r` muy\u ko ;na.Morkzure mezd se;uad poz[geneix ;na.Ka se;uad ko be;r rvv ;v noll, solphor, phosphoros, vmn kvtv` ka se;uad muy\u ;na. Otw, je f an, n i trojvn, kloren, helezm vmn poz[ka se;uad muy\u ;na.Bromen mezd sumwjul ka se;uad muy\u ;na.

Ondo` cemezw muy\u ko mvn` okona koce se;uad ar ka se;uad barn lvka ko p i teza.Cvn` ce vna korv cemezw se;uad ar cemezw ka se;uad guyn ko mvn‘.Nvlv kn muy\u ko f o hon **se;uad** ko mv;`.Arsvnek mezd hon se;uad ;na. Re;a rvz` muy\u ko;v abu : cok` biza kna. : cok` rvz` 99 p\` l;ar no;or 10 za muy\u ;v biza kna.Mu;ed je;a geneix rv pur` ;v pur` ypuneza muy\u ko ;i na.Vna ko f o hoba zna - noll, je f an,otw,ar n i trojvn.

Muy\u ko : 'cok` rv bhga p\`

Je f an.....47%
Selekon.....27%
Alumenezm.....8%
Mvhd.....5%
Koblt.....3.5%
Sodezm.....3.0%
Potasezm.....2.5%
Mgnvsezm.....2.0%
Tetanezm.....0.5%
Otw.....0.167%
Vmn ;vmn muy\u ko.....1.333%

Mu;ed muy\u geneix ko rvz` apn-apen guyn ko ;ina.Geneix r` s f z'` guyn bvgr mu;ed guyn korvz` cemezw ;nga guyn ko ;ina.Vna ko abu cv;n bara pa korvbu p\aoza.

Otw sbvn koz;v lhr rvna ;vz` muy\u ;na.Nvna mezd loo po\omo` lvkn muy\u ;na.Je f an rvz` mezd ;nga guyn f o nvna ce vt` geneix ko loo` lgvdv` f v[ga koa.Otw ar je f an rvz` abga menexa rv f `a berra kna.mv f o f `a f o kajulo`a ce vt` ko kav jul f v[ga koa.

Breza karv swge muy\u ko ako be;ar rv abga menexa k;v nma nma geneix koko ollv za.Mezd muy\u ondo` mezd muy\u lo` celeka rv abga menexa hobn ;v nma geneix ko biza,vna cv;n bara pa rv bu p\aoza.Nvlvka ;v biza kno` ;vz` geneix ko muy\u geneix koz ;v ;nga y;arw how hoba f iza.Abu a f an ;vz` cemezw muy\u ko i f e kvv;v abga menexa k;v bu nvl lvka'`,cvn` ko oll ;na.

APV NW KRU ID -1.11

Breza muy\u ken jvmon,mvhd ar solphor gunda agu k;v mezd steil gena rv vmvpv.Mezd rnac`(mvgnvt) agu k;v vn mvhd gunda rv jp`z rv f o mvhd gunda ko f o s[gv`or jp`za.Cen`ce solphor loo`mezd gena rv ti kvn rvzo mvhd az`guyn ka bo f ola kna ce solphor gundao vnka gv mvn`.Steil genarv vn solphor ar mvhd ken reka kvv ;v lolo z pv,cvn`celekao ;na nvlvpv? Gena rv mvn`gunda ken rvz`r[ bo f olv zna ce?Rav kv ;v ondo`vn gunda rvbu ;umuy lvka`,nvlv pv azr lvka gunda ko jua`o ;na ce?Nvn be\y ;v atkrv zna ce,mvzd ar solphor lolo`;n f epelw abga menexa k;v mezd nma geneix rvken pltaa kna. Akena guyn ko f o ken ad cba ;da.Okon nma geneix bi zna vna ;nga guyn ;vza.Nvn nma geneix f o phvros solphid.Nvna f o muy\u geneix f o ka ;na.Nvna f o svll geneix ;na.Nvlvka vsupur`mvn`,Apv mvnv rv f o ondo vt`vt`ko be\y k;v pv nvl f iz`.Noll,cene,bulu[, f `a,cook,glukoj,jomv soda,benvgr vmn muy\u ko f o ko ka ;na.Nvna ko f o swge muy\u ko mezd k;v abga menexa hoba kna.Neku`` guyn muy\u geneix ko ;`z ;v ipm gvza.Nvlv kn geneix ko f o **svll** ko mv;`.Muy\u ko f o akoa`mezd ojon rvz`lvkajoka(proportion) rv med;`k;v mezd ;nga ojon rvz`svll ko berr za.Jvmon 5 6 gram mvhd gunda, 3 2gram solphor loo`abga menexa rv 88gram phvros solphid mvn;vz`svll bizo` a`.Svll geneix koo gv nerla gvza.Nvkoa`mu;e ko f o sbvn medmedgvza.Vna cv;n bara pa rvbu p\ao za.

KONO~ - 7

* Noll rv okon okokon muy\u ko mvn`?
* Bholtametor koh\orv f `a ;la ;v hecer sv[gvl (electri) kulv rv okon muy\u ko oll a`.....?
* Noll,otw,ar je f an vnka apeza muy\u ko oll a`````.Glukoj mezd svll ;na vna pormn vmvpv.
* 84gram mvhd gunda, 5 4gram solphor loo`abga menexa k;v cemen gram phvros solphid bizo`a`.Br rokom nerla geneix(muy\u ar svll)

bgv k;v ondo` gv vsupur` geneix kobu nvld gvza.Mezd vn lvkn geneix hobao` ;na hozo.Hozo cvkn geneix ;na?Nvn rv cvn` cvn` ko mvn`? Apv azr ;vpv a f anahozorv,n i trojvn,noll,je f an,ysezm ar hu\e[hu\e[ka nmo` oz[ ko mvn`.Vn loo` ;v dull ar conov jey koko ;iza kno`a`.Vn be;r rv nitrojvn ar je f an hobao` ;na muy\u ,noll ar ysezm f o svll geneix ;na.Ka nmo` oz[o gv muy\u ;na.Nvna ko mezd lvkajoka rv hozo rvko lvzwa kno` a`.Vna ;v hozo kv muy\u karv svll z ka kje f izo` a`.Nvna swge muy\u ar svll korvz`menexa;na. Menexa muy\u ar svll koz ;v ro ipm gvza.Menexa mezd nerla geneix f o ka ;na.F`a mezd nerla ar svll geneix ;na.Mvn f o g\a,dmuka, f orvza,xuyd korvz` f ` f o cvn` bu mvnvza?Re;a re;e koz ;v z` f `a nerla f o bno`a‘.Nvn f `a rv vsupur` mv]vd bulu[ ar je f an ko lvzwa kn tina.Vn f o nvlvkn f `aogv menexa ce mexree gvza.Mezd mexree rv swge muy\u kogv mvn`.Vnka swge svll ko;v zo mexree bizo` a`.Muy\u ar svll mexa k;v biza kn mexree ko mvn`(hozo) Vn f o mexree f o okona bu mv;`a?Okon geneix rv swge muy\u karv svll ko ;ina karv muy\u ar svll ;v geneix biza kno`a`, vna f o mexree ko mv;`a.

APV NW KRUID -1.12

Apv jom nuy ;n ;vza gvlvza mexree geneix rvz` numu lvka y f ubv pv.Vn mexree rv mvn` muy\u ar svll ko rvz` numu ko ;v l;ar p\a lvka apvz` onol pu;e rv olv pv.

Mexree	**geneix ko**
Cene sorbo;	Cene, f `a
Slad	pvzaje,;zar,bvla;e,bulu[.
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - -
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - -
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - -
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - -
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - -
- - - - - - - - - - - - - -	- - - - - - - - - - - - - - -

Foka nvv ;vbu kere[k;v bu jomv ;n mekscor nvlv kn` ;na mvn lvka pv a f z ;na ce?

Cv;n rv hoba zn mexree korv mvn` geneix ko muy\u ar svll ko ;na, akoa` guyn ka bo f o la kna.Cvn` ce nvn geneix ko mexa k;v mexree bi f epilw jan abga menexa kako biza kda.Vna ;v akoa` guyn rv jan bono f ol bnbo` gvza.Jvmon cene sorbo; cenelvka gv nogoda.Baromoja mekscor ,b f am jw rvz` sebel,ce r[rv jv;n nma f o bno` a`.Vn geneix koo gv meneixa rv med gv ojon k;v f o kako mexa kna.Goroj o\[abu vn menexa rvn geneix kobu vsu aqja ;vbu ;nga o ll f iz`a.Cylerv ju f e rugud ko mexa kno`a`,rugud ko celeka slao` a` a f an gvza bu.Foka nvv ;vz` geneix ko vnka gv vsu pur` slz ;v hoba bu ;na.Vn lvka gv cax geneix koz ;vzo vnka gv ;nga o llv ;v hoba bu ;na.

Be\y o\` rv rokom rokom geneix ko ;nga o llv ;vz` ;nga ;nga hora ko mvn`a.Vna lgvd hosv` (sedimentation), ;nga o ll (decantation), l ;e[(filteration) bpao (sublimation) vmn peteka o\` rvko biza.Cv;n bara pa rv vna ko bexz rvbu p\aoza.
Mexree bar rokom,Medgvn`, ar ipm ;vz` ko;v bizo` a`.

1.7 Hol[ar lop[-

Apv a f a nace mu;ed muy\u geneix ko vsupur` conov z;v conov y;arw mu;e ko;v biza kna.Muy\u rvz` nvn conov y;a rw mu;e ko f o **lop[** ko mv;`a.Mezd muy\u rv sbvn lop[ ko med rokom gvza ko.Mvn f o vn kn muy\u koo mvn`,okon koa` ce vsu rokom lop[ ko mvn`. Vn kn lop[ko f o **pn;e** ce aisotop (isotope) ko mv;`. Celeka noll-12 ar noll 14,protezm($1_h$) detvrezm($2_h$) ar tritezm($3_h$) vmn.Buta muy\u rv z` guyn az` pn;e lop[ rvzo nvdlmo` a`.Vn lvka svll geneix koo gv vsupur` conov conov mu;e ko;v biza kna.Nvn svll rvz` conov y;arw mu;egv **hol[** ko mv;`. Svnvll rvz`

guyn ko vna rvz` hol[ korvzo jkv nvdlmo` a`. Svnvll rv okon okon muy\u ko mexa kno` a`, vn svnvll rvz` hol[rv, vn muy\u rvz` lop[ ko ; iza kno` a`. Vsu pur` muy\u rvz` hol[ ar lop[ med med no` gvza. Kvtv` muy\u ko rvz` hol[mepezd lop[;v biza kno` a`. Jvmon - sol phor, noll, mvhd, ;mba vmn ;vmn. Oz[muy\u rv rvz` hol[ rv ba bareza lop[ ; iza kno` a`, Jvmon - Je f an(O_2), otw(H_2), Nitrojvn(N_2) vmn.

Abga bno f ol rv muy\u ar svll koa` hol[ar lop[ko;v hoba na. Vna ko cnab ;vbu cergalvza.

1.8 Muy\u ko rvz` mrka (symbol of elements)-

Mu;ed muy\u korvz` ;nga f pi numu mvn`. Jan muy\u ko bexz ;v yrum y f ubv rv f o,Vna rvz` pura numu ol k;v,ttuka no` ;v ce;e ;v ol, aqja hobana.Nvn tutuka numu f o muy\u korvz` **mrka** ko mv;`.Mrka rv vn muy\u rvz` y[ku\u ce;e karv bareza lvka ce;e ;v y f uba kno` a`. Muy\u korvz` lten karv grek numu i[glex ce romn ce;e ;v y f ub prkao` a`.

Apv mn koa` numu, mondo rvz` numu, apv h;u, jzvla, atwge yte(rvl stvson) vmn ko gv tutuka ;vbu olv ;na.Celeka rmri saowza f oR.saoza,Lmbora Fege f o L. f ege,Lko f ra mondo f o L.B. mondo vnka bu olv ;na.

L;ar p\a rv cemezw muy\u r` numu ar mrka ko vma kna.

Muy\u	mrka	muy\u	mrka
Otw	H	Sodezm	Na
Nitrojvn	N	Potaxezm	K
Je f an	O	Mgnvsezm	Mg
Kloren	CL	Kvlxezm	Ca
Bromen	Br	Jewk	Zn
Aizoden	I	Mwganej	Mn

Helezm	He	Xexa	Pb
Nezon	Ne	Mvhd	Fe
Noll	C	:mba	Cu
Phosphoros	P	Hidrajerom	Hg
Solphpr	S	Sona	Au
Selekon	Si	Rupa	Ag

Mezd mrka p\ao k;v muy\u rvz` numu cergl fizo`a`. Vn mrka fo muy\u rvz` mezd lop[lvka soom jaoa. Jvmon mrka 'H' otw muy\u rvz' mezd lop[soom jaoa.Cemezw muy\u korvz` hol[ vna rvz` lop[koz ;v roo ;nga gvza.Ynu fub lvka ;v otw muy\u rvz` hol[ rv bareza lop[ ken mvn`.Vna ;v otw hol[kv vt` lvka porkr ;v ol y fubo` ;na.Vna fo **hol[mrka** ko mv;`.Ynu fub o\[, Otw rvz` hol[mrka H_2 Je fan rvz` hol[ mrka $O_2$ nitrojvn rvz` hol[mrka N_2 vmn`.

1.9 Svll geneix ar vna rvz` hol[mrka-

Apv a fana bareza karv swge muy\u geneix ko mezd lvka joka rv abga menexa k;v , okon nma geneix ko biza vna fo svll geneix ko mv;`a.Svll geneix rvz` guyn, vna rvz` muy\u geneix ;`az ;v ipm gvza.Svll geneix rvz` mnconov ;vza mu;e fo hol[ ko mv;`a.Svll geneix rvz` sbvn guyn vna rvz` hol[korv nvdlmo`a`.

Mezd ynu fub lvka ;v nvn;` rvbu nvlvza.Breza otw lop[ ar mezd je fan lop[ abga menexa hobn rv f`a rvz` conov lvkn mu;e( f`a hol[) bizo' a`.Vna ;v f`a hol[rvz` mrka hobao` ;na H_2O. Abu nwom loo` jomv ;n bulu[ rvz` hol[rv Mezd sodezm lop[ar mezd kloren lop[;ina.Vna ;v bulu[rvz` mrka hobao ;na Nacl .Nvn bulu[ rvz` guyn, sodezm ar kloren

rvz` guynv ;v roo ipm gvza.Me ;u\` bulu[rvz` okon guyn mvn`,Vn bulu[rv mu;ed hol[rv vnmn guyn kogv mvn`.

L;ar p\a rv cemezw svll ar vna rvz` mrka vma kna.

Svll	**Cena**	**Svll**	**Cena**
F`a	H_2O	Cuyn f`a	$Ca(OH)_2$
Noll	CO_2	Solphzurek vsed	H_2SO_4
Krbon monoksid	CO	Nitrek vsed	HNO_3
Solphor dioksid	SO_2	Hidroklorek vsed	HCL
Amoneza	NH_3	Glukoj	$C_6H_{12}O_6$
Soda	$Na_2CO_310H_2O$	Cene	$C_{12}H_{22}O_{11}$
Bvke[soda	**$NaHCO_3$**	Kvlsezm krbonvt	$CaCo_3$
Sodezm hidroksid	NaOH	Potaxezm hidroksid	KOH.

Cvn` pv v;o kvda -

* F`a,hozo,oa` fuar,xan, hsawgarr vmn geneix ko mv;`a.
* Cemezw geneix fo re;a ar cemezw fo ho\ba\uiz'` ;na.
* Mu;ed geneix rvz` gene` mvnv` ondo` cemezw tzvdv` ;najoza.
* Geneix ko apeza lvka rv mvn` vna ko fo ,kvtv`,jol ar jul.
* Geneix rvz` apeza lvka rv vna rvz` b[ga guyn vnvsvr,tnazvd, ipm gvza.
* Geneix ko apvv rokom,celeka - Muy\u,svll ar mexree.
* Muy\u ar svll geneix koo nerla gvza.
* svnvll rvza mu;e ko aqjagv ;nga f izo` a`.
* Muy\u rvz` conov no ;vz` mu;e fo **lop[** ko mv;` ar svll rvz` hu\e[y;arw mu;e fo **hol[** ko mv;`.
* Muy\u ko fo akoa` mrka;v ar svll ko fo akoa` cena rvz` fv[ga ;v aqja ;v yrumvna.

INE : U{

1. p[ka ko f o pvrv` ;a pv.
   ([) Geneix rvz` jol lvka rv mezd.....;ina mvn f o mezd..... f o ka;ina.
   (g) Geneneix rvz` jul (oz[) lvka rv mu;e ko ako be;ar rv rpac` pv\v`.....;ina.
   (k) Okon nerla geneix rvz` lop[ ko med med gvza vna f o.....ko mv;`.
   (q) Hozo mezd.....geneix,mvn f o noll mezd.....geneix ;na.
   (j) Mezd muy\u geneix rv.....rokom hol[ka ;ina.
2. L;ar no;or geneix ko,muy\u ,svll ar mexree ko sla ;ngz pv. Kloren, morkzure, cuyn f ere, cene sorbo;, solphzurek vsed,r;w, ;oa, hera ar bulu[.
3. Mrka ar cena loo` ;v nvn geneix ko olvpv.
   ([) Mwganej lop[
   (g) kloren hol[
   (k) Cuyn f ` rvz` mrka
   (q) Nitrojvn hol[
4. Svll ar mexree be;ar rvz` brxa bga\e(distinction) olvpv?
5. Okon muy\u rvz` hol[ rv mezd karv swge lop[ ;ina, vnkn apeza muy\u ko rvz` numu olvpv.
6. Apv a f anace O_2 ar O_3 medo ondo` medo rvz` pn;e ;na. Mvn f o nvna ken bareza ;nga f pi geneix , ar ipm O_3 rvz` numu olvpv.Nvna naw` brse[cvn` rvz` sbvn ;` rvko lvckomv ;na olvpv?
7. Protevm, debhotvrezm ar tritezm ko otw rvz` apeza pn;e ;na.F`a rvz` cena $H_2O$ Ar vna rvz` goroj sbvn;` rv.Detvrezm ar je f an loo` ;vz` svll rvz` numu ar cena olvpv ar vn svll rvz` bexz ;v a f an ;vz` kje ko olv pv?

8. Mezd se;uad(Mv]vd)ar ka se;uad rvz` numu ar cena olv pv,okona s f z'` lolorvza rv jol lvka rv tiza kno` a`?(kono` 7 ar 8 rvz` hnl ol f epelw guru ken loo` jgr pv)

O\` rv lgvd kruid-

* Apv oa` rv mvn` geneixe ko okona re;a ar okona ho\ba\ui numulvka biepv?
* Apv oa` rv okon okon geneix korvz` lvka rv bo f olo` ;vz` pv nvla na,bara rv jgr azuma kopv?

BR CT~
B{GA AR ABGA BONOFOL

2.1 Geneix rvz` bono f ol -

Abu oa` rv ar oa` jp` korv mvn` vsu rokom geneix koa` bono f ol bu nvla kda.

Apv nw kruid - 2.1

L;ar p\a lvka apvz` onol pu;e rv biepv ar s[gv ;v mowza ynu f ub rekz pv.

Geneix	**Bono f ol lvka**
F`a	ymbz
Mvhd knte	i`a kn mvhd knte
.....	.....
.....	.....
.....	.....
.....	.....

Sbvn bono f ol med rokom f o bno a`, l;ar bara korv vsu rokom bo f ol kopv a f ana. A f anbu nvna ko, br rokom mvn`. Okona ko ka gh\e ar bezur ruana, vna ko f o sbvn b[ga bo f ol ko ;na. Okona ko gh\e ar ka bezur ruan ;vz` ko f o, abga bono f ol ko ;na. Nvnao bu a f ana ce b[ga bono f ol rv geneix rvz` cemezw b[ga guyn korv bono f ol hoba na. Jan nma geneix f o ka berr''. Mvn f o abga bono f ol rv f o geneix rvz` b[ga ar abga guyn ken rvz` bono f ol k;v nma geneix ko berr za ce biza.

Cenekv f`a rv lvza k;v,sorbo; bu biza, f`a kv lolo kvv;v ymbz bu oll za. Jta kv bu br knde` za,cc` kgoj ken jua` k;v bu med ;` rua za, vmn` bono f ol ko f o sbvn b[ga bono f ol ko ;na. Xan, iexen oz[, vmn` sbvn rokom junul rvz` loo, mvzd i`zo` ;vz`,vmn abga bono f ol ;na.

KONO~ - 1

Mezd otv` br fu julv fepelw apv sba ka pa celekao` a` cergalv pv ? Okona loo zna,vna geneix rvz` okolvkn bono fol ;na? Apvz` hnl s[gvrv bareza lvka kron y fubv pv ar guru ken loo` jpagr pv.

Apv nw kruid 2.2

L;ar pa rvy fubakn bono fol ko be;arvv ;v b[ga ar abga bono fol apn fpi 2.1 rv biza kn p\a rv olv pv, vn bono fol rvz` karon ko medpa rv olvpv.

* Bv[gh gvd k;v vm ;a rv cvn` rvz` r[bo folo`(hvw fv) a`.
* Bse f`a mnde morov gvza.
* mezd b;are ;hr kv aguk;v nwgale lvka pt` ;a pv
* Sikvl tezub rv hozo pvrv`v rv
* Br fui rv
* Cuyn gunda ;v cook bierv.

P\a 2.1 b[ga ar abga bono fol

B[ba bono fol	Cvn` rvz`	Abga bono fol	Cvn` rvz`

Apv nw kruid - 2.3

Apv nvlv ;n, cergalv ;n geneix ko be;ar rvv ;v okona ko celeka ;v b[ga ar celeka ;v abga bono fol ;na vn p\a rv olvpv.

Nvlvka vsupur` bono fol kobu nvlv rv b[ga ar abga bono fol ko ;e;r rv cemezw vg\om svg\om ko nvlo` a`.Vn vg\om svg\om ko fo p\a 2.2 rv vma kna.

P\a 2.2 b[ga ar abga bono fol rvz` ;ula mla.

B[ga bono fol	Abga bono fol
1. Nvn bono fol rv jv;n nma geneix rvz` ynupn bno` a`.	1. Nvn bono fol rv nma y;arw geneix ko ypano` a`.
2. Geneix rvz` nvn bono fol kagh\e ar bezur ruana. Nvna ylta rekz rv geneix rvz` azr lvta bvta yrana.	2. Nvnagh\e ar kabezur ruana.
3, Nvna ;v geneix rvz` gene` ka bo folvna.	3. Nvka ;v okongeneix bo folvna vna rvz` gene` bo folvna.
4. Nvna ;v lolo pur` karv komo` a` karv ka bo folvna.	4. Nvn bono fol fepelw jokano` lvka lolo rvz` bono fol hobana mexa mexa mrxal oltrabhazolvt vmn olla.
5. Nvn bono fol ;v geneix rvz` jv;n abga guyn rvz` jv;n bono fol ka hobana sma b[ga bono fol jvmon - lvka,r[,soan, vmn bo folo` a`.	5. Nvn bono fol ;v nma y;arw geneix ko bin ;n;v,vna nma b[ga ar abgaguyn lvka hobana.

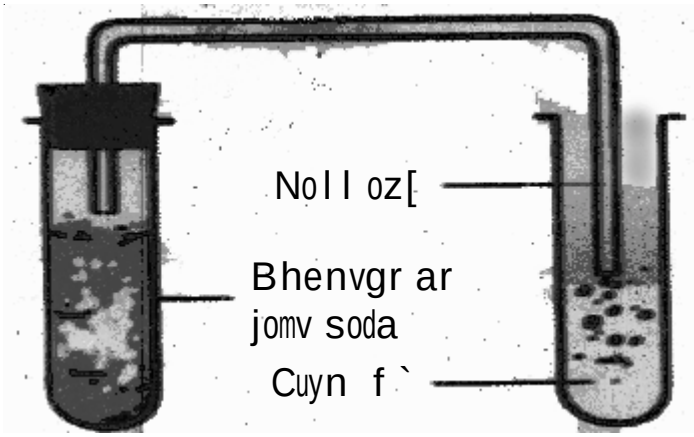
2.2 ABGA MENEXA -

Abu p\ao kvda ce abga menexa korv, sbvn ime;a nma nma geneix ko oll''.Nvna celeka ;v ar oko lvka ;v oll'' vna a f z lgvd sbvn hokoa` snw hobn ;na.Vna ko f o cv;n bara pa rv b]eza ;vbu v;o za.Mvn f o nvn;` f o nvn mn abga menexa ko apv ;v bi kvv;v nvlvpv.

Apv nw kruid - 2.4

Mezd be\ao t[g` rv med cmoc benvgar vmvpv,vnrv med pec` jomv soda(sodezm bikrbonvt) mexa k;v nvlvpv celeka zna. Ondo` mezd be\ao t[g` rv f o, joka no` lvza kn cuyn f `a reka ;a pv. Ma[` 'be\ao t[g` rv burbu\e` oll loo` oz[oll``' ar sao sao ;n x\eza.

Oll ;n nvn oz[kv s[gv s[gv nvn cuyn f `a rv a f vr lvka pv, cvkn' hobao` a`.



Pte - **2.1 cuyn f `a loo` noll oz[rvz` ynu f ub**

Cv;n be\ao rv okon okon bono f ol ko hoba zna,vna ko ol jogaoz pv cnab ;vbu jgarvza.

Apv nw kruid - 2.5

Mezd ;ral kco doa` rv me cmoc kopor solphvt loo` goroj o\[f`a ful k;v lvzw bie pv.Mvn` rv fo nvn lvzw rv br apv tvb dilzut solphzurek vsed mexz pv.

Husezr - Dilzutsolphzurek vsed mexz fepelw joka husezr ;in pv,nvlvpv jvmon apvz` xu;ui korv karv homoh korv aloka to` o`.

Nvn lvzw rvz` numu ol rekz pv ar mezd kco t[g` rv vna joka si;eba ;a pv. Kco t[g` rvz` lvzw rv mezd ka i`za kn mvzd knte kqju ;a pv ar ;la gu\e lvka cnb nvlv pv cvn` ceka zna?

Mvhd knte kqjui azr ;v kopor solphvt rvz` r[ celeka ;ikvna? : la gu\e cnb vna rvz` r[celeka zna, vna ko sbvn oll rekz pv cnb ;vbu jgarvza.



(Pte - 2.2 kopor solphvt loo` mvhd knte rvz` menexa rv bono fol)

Cv;n no;or bareza bono fol rv cvn` cvn` hoba kna bu lvckomvza. Naw` fo ma[ ;v 2.4 rv hoba kn bono fol rvz` bu nvlvza. Benvgar loo‘ ;v jomv soda rvz` menexa ;v mezd nma geneix r` ynupn hoba zna. Okona xao xao x\e loo` ;v burbu\e` oll ;ikvna. Apv re` re` f`a nuy ;n rv bo;olvv ;v celeka xao xao x\e loo` burbu\e` olla pv nvla kda? vna fo okn (oz[) ;na? Vn oz[ pere` cuyn f`a rv a f vr kvd rvgv cuyn f`a pozoh zna. Noll (krbon dioksid) oz[rvz` mezd guyn ;n;v, abu atkar kvda ce nvn oll ;n oz[fo noll ;na.

Apv a f an gvza ce cuyn f`a hobao` ;na kvlsezm hidroksid rvz` lvzw ;na. Vna loo` ;v nool rvz` menexa ;v vt` mezd abga geneix oll zna, okna pozo gv nvlo` a` ar f`a rv ka lvzwna. Vna ;v y[k\u rv spa pere` gv ;ikvn cuyn f`a ;zom fo punde pozoh zna. Nvn nma geneix fo kvlsezm krbonvt. Nvn bono fol ;v breza nma geneix noll ar kvlsezm krbonvt oll zn nw nvna fo abga bono fol ar nvn;` rvz` muy\u geneix (benvgr, jomv soda, oll zn noll ar cuyn f`a) ko be;r rv okonokon menexa hoba zna vna fo abga menexako mv;`.

KONO~ - 2

Apvz` mondo karv oa` genel ko cuyn ;vko lundz f epelw pv nvln gvza azr fo joka pl poz[gv nvlo` a` ;zom fo okob okob nvlo`a`.
Nvka cvn` rvz` hobn ;na? Nvnbexz rv apv gurukeq loo` jpagrpv.

2.5 rv hoba zn bono fol rv agua kn kopor solphvt lvzw leel r[;ikvna. Vn rv mvhd knte kqju kvd ;la gu\e cnb gv r[bo fol zn ;v g f vd r[v zna. Nvn g f vd f`a rv lvzwo` geneix fo airon solphvt. Neme;w mvhd knte cv;n rv pndra r[;mba rvz` r[;mbaruba kna. Nvna fo kopor solphvtv

;v huju` a` kn ;mba rvz` lvzw ;na. Nvna f o mezd abga menexa ;na.Kopor sol phvt loo` mvhd rvz` abga menexa f o mezd abga menexa ;na.
KONO~ - 3

L;ar p\a kv pvrv`v pv

Bono f ol	**nmageneix onoll**	**Muy\u geneix nmo` ce?**	**Abga ce b[ga bono f ol ;na.**
[. :oar v f `a mexao` ;vz`. g. Yul ;v suitr ;v[. k. :oa, cene,r ;w koloo` ;v aixkrem bni i. q.;oa z ;v f ohe bni. j. mohm svrro` ;vz`. c. mohm b;e julv ;vz`. ]. mcex irrd.bse pawrute rv yd omono` ;vz`. t. dhle y;u bse morov` zo` ;vz`. n. roo p;h, jobora ko;v bo f arbni			

2.3 ABGA BHRE

Apva fa nace mezd muy\u rvz` lop[ az` mrka ;v ar bareza jkv muy\u ar svll rvz` hol[ r` mrka ;vy fub so forvna. Vn lvka gv mezd abga meneixa nw okon bhre ;v tutuka ar mrka ;v yrumna vna fo abga bhre ko mv;`. Nvn bhre g]ed rv hobn ;n g]edv ;v ipm gvza. Abga menexa rv okon okon geneix ko mexa kano` a`, vna ko fo **bni fv[ga** ko mv;` ar vn bni rv okon okon geneix kol oll zna, vna ko fo **onoll** ko mv;`.

Abga bni fepelw vn rv mexn ;n geneix ko bni fv[ga holo[rv mvn` lop[tnzvd rv celeka bono fol k;v nma geneix ko oll ;na, vna cv;n bara pa korv bu p\aoza .

Mezd abga menexa rv mezd karv swge bni fvv[ga ko mexa fiz`. Mvn fo mezd abga menexa rv mezd karv swge onoll hobana. Abga menexa olv fepelw vn bni fvv[ga ko vnako rvz` hol[mrka ar onoll ko onoll hol[rvz` mrka lvka ;vy fubvna.

2.4 ABGA BHRE OLV NEZM-

Mezd abga bhre olv nw cvn` ko goroja ma[ ;v afz forkara. Vna lgvd mezd s fz abga bhre bu i feza, vna fo-Mgnvsezm pe;a rvz` hozo rv jul.

Apva f napv ce mgnvsezm pe;a rv swwgvl jul kvvrv pere` ar fwgar kvno` a`. Cnb punde pozo ;orov oll a`. Mgnvsezm nvn abga bono fol lgvd hozo rv mvn` je fan oz[ loo` abga menexa hoba na. Nvn rv oll ;n punde okob ;orov fo mgnvsezm oksid.

Nvn abga meneza kv mezd abga bhre lvka ;vbu oll mrxlvza. Vna lgvd l;r no;or mna;e[kvbu o;[sree za.

* Abga bhre ollv azr ;v bni fvv[ga ar onoll hol[rvz` cena ko vmn atakrv ;vz` goroj mvn`. Abu i fe;d ynu fub rv fo mgnvsezm ar je fan hobao` ;na bni fvv[ga ken. mgnvsezm mezd kvtv`(koz[) se;uad muy\u geneix ;n;v nvna rvz` mu;ed hol[rv mepezd lop[;ina. Vna ;v nvna rvz` hol[ mrka ar lop[ rvz` cena bara bare gvza vn fo hobao` ;na-Mg . Je fan mezd muy\u geneix rvzo gv nvna mezd oz[ ;n;v vna rvz` mu;ed hol[rv bareza lop[ken ;ina. Vna ;v vna rvz` cena $O_2$ ;na. Nvn menexa rv onoll hobao` ;na mgnvsezm oksid. Nvna mezd svll geneix ;na.Nvna rvz` mu;ed hol[ rv mezd mgnvsezm lop[ ar mezd je fan lop[ ;ina.Vna rvz` cena fo-MgO ;na. abga menexa rv bni fvv[ga ar onoll hol[rvz` cena gvko olvza.

* Abga bhre rvz` v;om kute fo bni fvv[ga koa` cena ar koqjv kute fo onoll rvz` cena ko olo` a`. Vn rv fo nvn bhre rvz` v;om rv Mg ar koqjv rv O_2 ar koqjv s` rv MgO olv ;v hobao`a`.
* Nvn ;` rv mgnvsezm ar je fan barn bni fvv[ga ken ;n;v vna ken rvz` hol[cena ;la rv xah cena+ olv;v hobao` a`.Ju fe jv;n bhre gv olv fepelw swge onoll kogv y fubv goroj ;na,vnrv fo vn hol[ko ;la rvzo + cena olv forkara.Nvn ;` rv bni fvv[ga ken fo Mg+ $O_2$ ar mezd sumw onoll lgvd MgO olo` a`.
* Bhre rvz` v;om koqjv kute ken ;ngz lgvd sr (⟶) Cena olo` a`.Bni fvv[ga ar onoll ;larv nvn sr cena olo` a`.Sr fo v;omvv ;v koqjv ;v y fubo` ;n;v bni fvv[ga z ;v onoll hobn ;n` y fubo` ;na.
* Ma[;v abga bhre fo bni fvv[ga ar onoll ko rvz` numu loo` ;v ol fizo` a`.Jvmon mgnvsezm+je fan lolo mgnvsezm oksid.
* Cv;n rvz` abga bhre fo bni fvv[ga ar onoll korvz` cena kolo` nvlvka olo` a`. Mg+O_2 lolo MgO.
* Cv;n rvz` abga bhre fo xz jw(skeletal) ar kasomn (un balanced) bhre ko mv;'.

* Abga bono f ol rv ,bono f ol - azar` gene` ar bono f ol cnb gene` sbv ime;a bara bare tina,nvna mezd nezm ;na ,vna apv cv;n bara pa korv pv p\aoza.Kje prceirv bugena, abga menexa rv mexa kn bni f vv[ga koa` snm gene` ,menexa ;zom oll ;n onoll koa` snm gene` loo` bara bare gvza.Vna ;v kabara bare bhre kv bara baree ;vz` goroj mvn`. I pm abga menexa korv goroj o\[vsu swge hor ;v nvn bhre ko ko bara bareza.Ma[y;arw f o sbvn kz ;v s f a ;vz` (hit &trial ce trial & error) lvka ;v bara bare hoba na.

* Ka bara bare bhre f o nvlvka mvn` - $Mg+O_2$ lolo MgO.
Nvn bhre rv br kute rv mgnvsezm lop[awka mepezd mvn` ;v bara baree za kna.Mvn f o je f an lop[ rvz` awka f o v;om kuterv bareza ar koqjv kute rv mezd mvn` ;v ka somna kna.Vna ;v je f an lop[ rvz` awka br kuterv bara baree lgvd okon pa kuterv je f an koma kna,(koqjv kute) ar okon hol[rv mvn`( MgO) vna kv bu brxa za.Naw f o bhre f o nvlvkao` a`. - $Mg+O_2$ lolo 2MgO.Naw` f o je f an lop[awka brpa kuterv bara bare zna, mvn f o Mgnvsezm lop[awka brpa rv ka bara bare zna.V;om kuterv vna kozv;v vna Mg kv brxz ;v hobao` a`.Vnka ;v vn bhre nvlvka rua zna - $2Mg+O_2=2MgO$.Naw` f o bhre f o bara baree zna.Ol ;n f epelw nvlvkn bara bare bhre olvrv vna rvz` ($\longrightarrow$)sr cena tzvd rv(=) cena olo` a`.

PHMV PV-



Abga menexa kv bara baree f epelw bni f v[ga ar onoll koa` cena ko cuilao alopv bo f olvza.

Abga bhre ol ar vna rvz` bara bare svbvn lgvd ondo` mezd ynu f ub bu nvlvza.Otw ceme;w je f an loo` kv\v` lolo rv mexana, ime;w f `a bizo` a`.Nvn menexa otw ar je f an hobazna bni f vv[ga ken ar f 'a hoba zna onoll.Naw' f o bhre f o nvlvka - $H_{2+}O_2 \longrightarrow H_2O$....(1).

(Nvn ;` rv $H_2$,$O_2$, ar $H_2O$ ko fo otw ar je fan ondo` f`a hol[ rvz` cena). Cv;n bhre rv br kute rv otw lop[awka bara bare gvza,mvn fo je fan lop[awka fo somn bno` a`.

Lop[	Bni fvv[ga kuteawka	Onoll kute awka
Otw	2	2
Je fan	2	1

Vna ;v je fan lop[kv somnv lgvd f`a ($H_2O$) hol[ kvbu brxa za.Vna ;v bhre fo nvlvka zna- $H_2+O_2 \longrightarrow 2H_2O$. Nvlvk;v bhre rvz` br kute rv je fan lop[awka fo bara bare zna, Mvn fo otw lop[awka kasomn zna.Vna ;v br kuterv otw lop[awka kv bara baree lgvd, v;om kute otw hol[awka kvbu brxa lvvgv.Naw` fo bhre fo nvlvka zna- $2H_2+O_2 \longrightarrow 2H_2O$ ar bara bare zna. Vna ;v tzvd rv=B olvza. Jvmon,- $2H_2+O_2=2H_2O$.

Kono` - 3.
Bhre(1) kv barabaree lgvd ju febu olvza,- $H_2+O=H_2O$
Vn rv fo cvn` lotomo` a`?Apvz` hnl so forvpv.

Kono‘ - 4.
L;ar no;or abga menexa ko lgvd bara bare abga bhre olvpv.

([) Hozo rvz` noll (krbon) julo` fepelw noll oz[(krbon di oksid) oll’`.
(g) Sodezm ar kloren loo` abga menexa rv mgnvsezm klorid oll’`.
(k) Otw ar kloren loo` menexa rv Hidrojvn klorid oz[ oll’`.

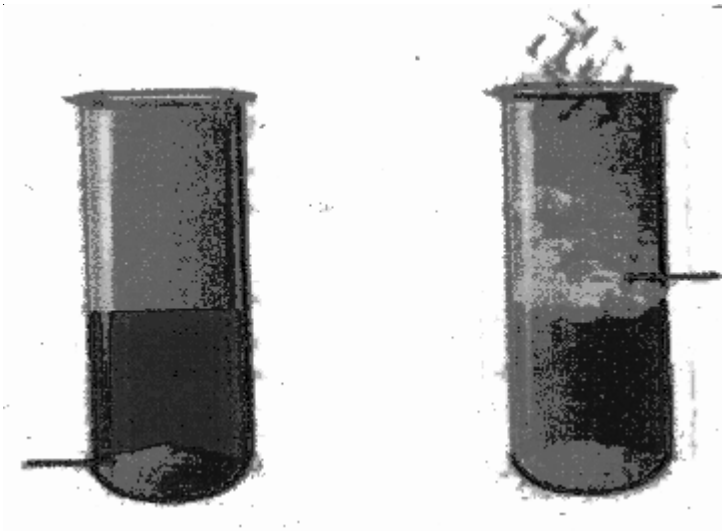
Cvn` pv v;o kvda-

* Rokom geneix korvz` bono fol hobana.
* Nvn bono fol ko fo pur` ;v pur` br rokom hobana,vna fo- Abga bono fol ar b[ga bno fol.

* B[ga bno f ol ko f o,bezur ruana ar vna ;v geneix rvz` sma b[ga guyn ko sumw bo f olvna.
* Abga bno f ol ko f o ka bezur ruana ar vn bno f ol ;v geneix rvz` abga ar b[ga guyn rvz` o` bno f ol hoba na.
* Abga bno f ol ;v f o sbvn ime;a nma geneix ko bizo` a`.
* Abga bno f ol f epelw abga menexa hoba na.
* Abga menexa rv mexn ;n geneix f o bni f vv[ga ar menexa k;v oll geneixe f o onoll ko mv;`.
* Abga menexa rvz` tutuka,cena lvka ;v snamw ce y f ub so f or ko mv;` abga bhre.
* Abga bhre kv br rokom ko olvza jvmon - barabare ar ka barabare abga bhre.
* Mezd bara bare abga bhre rv br kuterv medgvn med somn lop[ko ;ina cvn` ce, abga bono f ol hoba zn rv bo f olo` azar,gene` ar bono f ol cnab gene` sbvn ime;a bara bare ;ina.

Solphor bulu[mexz azr ;v

Solphor bulu[mexz cnb ;v



Pte - cene ar solphzurek klorid menexa.

INE : U{

1. L;ar no;or bono fol ko okonako b[ga ar okona ko abga bono fol ;na cenz pv?

([) Mrxl arxl pnite
(g) Ppare kgojo ;v klge bi;vz`.
(k) Mezd ;mba pozsa kv ;m jele[v ;vz`.
(q) Cuyn f`a kv mezd b;are bo;ola rv reka k;v { ;vz`.
(j) Vsu rokom` jobora ko;v bo far bie ;vz`.
(c) :ulmvv ;v su;m bie ;vz`.

2. Nvn bono fol ko okna b[ga bono fol mvn fo,ka bezur ruan`.

([) Aiskrem svro` ;vz`.
(g) Cina hasa ;vz` bh tuk` rpudo` ;vz`.
(k) Ilvktrek bolb julv ;vz`.
(q) Mvhd knte iezo` ;vz`.

3. Mezd faru mutu kv bnde` bnde` kvv ;v ;e[v rv breza ;nga fpi bno fol hobana,cvn` rvz` kjeipv?

4. Nvn bhre ko agabare fo bara bare ;apv.

([) $Na+O_2 \longrightarrow Na_2O$
(g) $Mg+CL_2 \longrightarrow MgCL_2$
(k) $N_2+H_2 \longrightarrow NH_3$
(q) $KCIO_3 \longrightarrow KCI+O_2$

5. L;ar no;or abga menexa barabare abga bhre lvka ;v olv pv.

([) Alumenezm je fan loo` mexa k;v alumenezm oksid ken ollvza.
(g) Sodezm ar noll menexa rv sodezm krbonvt oll'`.
(k) Potasezm ar solphor loo` menexa rv potasezm solphid ken ollvza.
(q) Krbon monoksid je fan loo` jul zn rv noll oll'`.

6 . $H_2+\frac{1}{2}O_2 \longrightarrow H_2O$ bhre f o teike za ce ka bvzanv pv.

Oa` rv nw kruid-

Apv oa` ar oa` jp` korv hobn ;n bono f ol korvz` mezd numu lvka bie pv.Vnako be;arvv ;v okonako b[ga bono f ol ar okonako abga bono f ol slz pv?

Nvn numu lvka rv mvn` okon bono f ol ko nvn f arww dgvla cba za, vna ko ;nga ol lv pv.Nvn f arw celeka;v dgvla cbao` ;na bv[ga bwge onol k;v mondo ;v agui pv.

APVV CT~
MOROV, GG : ~ AR MVVR

Jaogv abu lembud(lemon), bulu[,cene,jojo,benvgar vmn` kobu jomv ;na.Nvna ko celeka jomo` a`?Vna p\a 3 .1 rv ola kna, rokom rokom nwom ko celeka jomo` a` cergalvpv. Okona apv kpv ckaa kda, vna naw` ckz pv ar nvn p\a pvrv` v pv.

Husezr - Ka kjeza kn jan geneix ko alopv saaba ce alopv caa k`,vn lvkn geneix ko abu'` hin hoba f iza.

P\a - 3 .1

geneix	Sebel(morov,nogod,gg;`,mvvr,ce vt` lvka)
Lembud rse	
Komo\a rse	
Benvgar	
Bulu[	
Morov ;oa	
Jojo	
Cene	
Mvrvl	
Jomv soda	
Awgur	
Bvrvl yle	

3 .1 Morov ar gg;`-

Lembud rse, komo\a, benvgar, ar morov ;oa morov gvza. Nvna ko ckz rv morov za cvn` ce morov mvn`.Nvna ko sbv re;a geneix rvz` abga guyn ;na.Morov xb f fo lten hzm rvz` vsedv ;vz` ;na.Mvn fo,jomv soda fo ka morov za,cvn` ce vnrv morov bno` a`. Vna gga;`a.Nvna kv bareza gnda ;v ;ermedv rv fo boor gv afao` a`. Nvlvka awgu\e;v boor afao` ;n` gv **gg;`** ko mv;`.

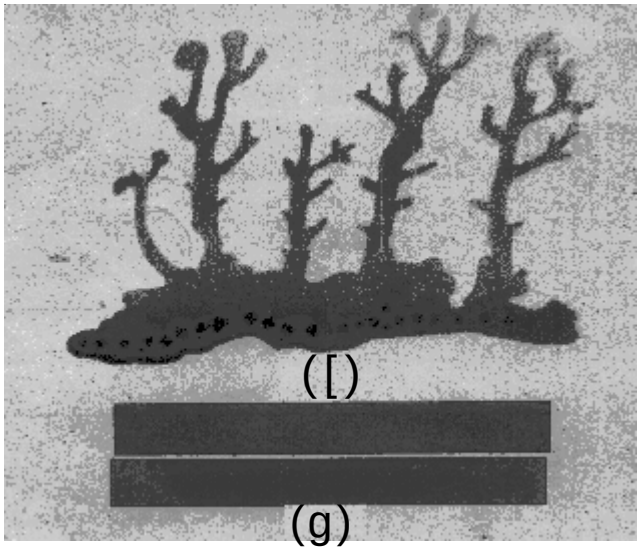
Abu kabu cka f i ;n geneix ko re;a rv ceka ;vbu atakarvza?Jv;n geneix rvz` morov karv gg;` guyn kv cergalv nw cemezw geneix ko ko;v cergalo` a`.Vna ko fo **i[gul** ko mv;`.Nvn i[gul ko lo` rv atakaro` a` vna morov za ce gg;` r[ bo f olvna. Letmos, ssw, mon f ar bh vmn inegul ko nvn re;a korv nmo` a`.

AFANA CE PV?	
Morov rvz` numu	re;a rv nmo` tzvd
Vsetek morov(njom)	benvgar
Phorek njom	mue,tonto, f umur koa` loqjo
Sitrek njom	komo\a, lembud.
Lktek njom	morov ;oa
Akjlek njom	p\o[go aa`
Askorbek njom	mvrvl(Bhetamen –c)
Tartarek njom	Jojo,awgur,bvrvl yle
GGA : ~ RVZ~ NUMU	**NMO~ TZVD**
Klsezm hidroksid	f`a cuyn
Vmonezm hidroksid	kco sapa ;vz` lvzw
Sodezm hidroksid	sbonPotasezm hidroksid
Mgnvsezm hidroksid	njom rvvd (antacid)

3.2 Re;a ine[gul (natural indicator) -

Letmos –

Letmos kv mezd muy\u re;a inegul ;vz` lvka ;v cena kna. Nvna g f vdv ;v bizo` a`. Hundeza kn f `a rv nvna rvz` kv\v` morov lvzw rv mexa zn rv nvna rvz` bor[ ar` ar gg;` lvzw rv mexa zn rv nvna rvz` r[leelo` a`. Nvna nvka lvzw karv kgojo lvka ;v nmo` a`. Nvna f o letmos kgojo ko mv;`. Jvmon ar` ar leel letmos kgojo.



Pte - 3.1

- **([) likvn ce g f vd(g)ar` ar leel letmos kgojo.** APV NW KRU ID - 3.1 - Lembud rse joka f `a mexa k;v mezd kco c[garv rekz pv.
- Mezd ar` letmos kgojo cv;n rv med tvb lembud f `a tvbv pv. Letmos kgojo rvz` r[ bo f olo` ;nace? okon rv r[bo f olo` ;na ol rekz pv.
- Vn lvka naw` f o mezd leel letmos kgojo cv;n rv mexa med tvb lvka lembud rse joroz pv, letmos kgoj rvz` r[bo f olo` ;nace? Celekn r[ bo f olvn ;na ol rekz pv. Vn cnb koh\o f `a, sbon f `a, smpo, bulu[ f `a, soda f `a, cuyn f `a, dkud f `a korv letmos kgojo dbura kvv ;v cergalvpv. Cvn` pv nvl kvda p\a 3.2 rv ollvpv.

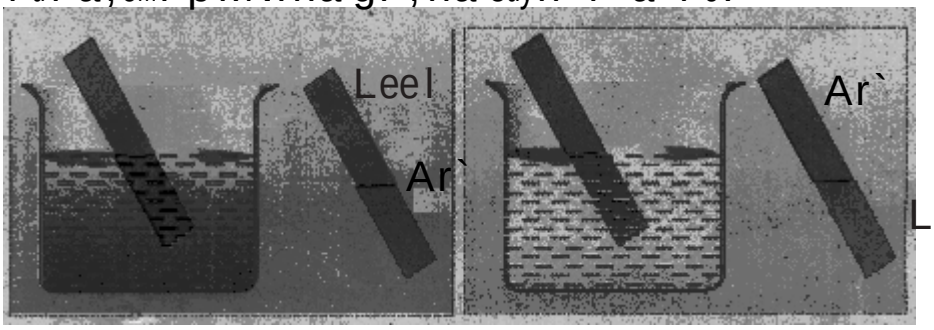
P|A - 3.2

:ene` awka Sph;e[	Lvzwa numu	Ar` letmos	Leel letmos	
		rvz` lvka;v	lvka ;v	
1	Koh\o f`a			
2	Sbon f`a			
3	Smopo			
4	Bulu[f`a			
5	Cene f`a			
6	Soda f`a			
7	Cuyn f`a			
8	Dkud f`a			

P\a rv vma kn geneix ko be;arvv ;v okona korv r[ka bo f olvzana? vna ko f o **kabo f olo` lvzw** ko mv;`. Nvna f o morov zo bno ;nace gg;`o` bno ;na.



PV - Cuyn f`a bi lgvd mezd doa` rv f`a agu k;v joka no` cuyn kqjui pv.Nvna Honda bezur k;v vm;a pv.L;ar pa rv cuyn f o ;mbarubo`a` ar cv;n pa rv mvn` spa f`a kv vt` ;vz` rv sua ;v f ul a;omv pv.Nvna gv ;na cuyn f`a f o.



Pte - 3.2 **Morov f`a rv leel letmos, gg;` f`a rv ar` letmos**
Ssw - Ssw mezd re;a rvz` inegul ;na, gg;` lvzw mexan rv f o ssw r[ar bo f ol k;v ar` r[hobana.

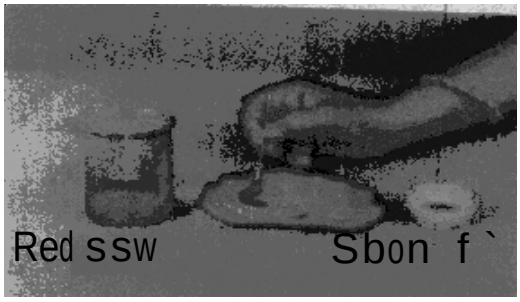
APV NW KRU I D - 3.2

Mezd mrw cmoc ;v ssw gunda jokano` f`a mexa k;v lvzw biepv. B lote[kgojo rv nvn lvzw f ul k;v roo ;a pv. Nvn ssw r[kgojo cv;n rv me tvb sbon f`a tvb ;a mv.Cvn` ceka zna? P\a 3.3 rv vma kn lvzw ko loo` nvn ssw r[ kgojo celeka bo f olo` ;na bu nvlvza.

P|A - 3.3

: .awka	Lvzw r` numu	ssw f`a rv bono f ol	Snw
1	Lembud rse		
2	Komo\a rse		
3	benvgar		
4	Cuyn f`a		
5	Cene f`a		
6	Bulu[f`a		
7	Jomv soda		
8	Soobod soda		

Nvlvka vsu rokom ssw kgojo bi kvv ;v vn cv;n rv sbon f` ;ulm jta ;v bvwga bwge onol k;v ju\e ko lgvd f ele skm ko bi f izo` a`.



Mow far bh -

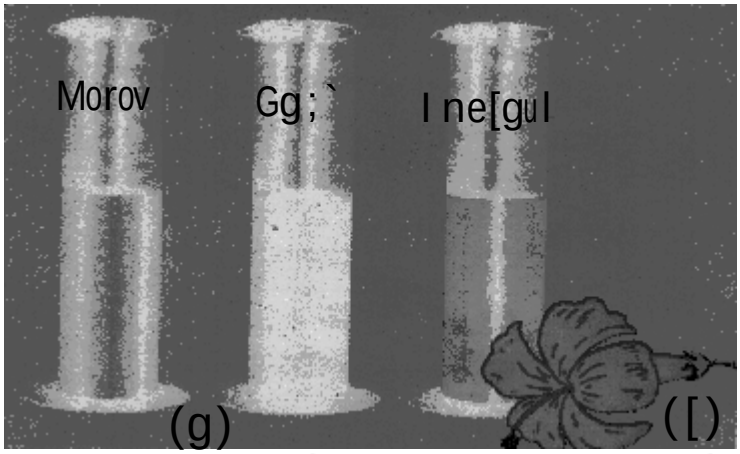
Mow far bh atlvv ;v bizo` lvzw mezd ine[gul lvka hobana. Nvn ine[gul morov kolo` mexan rv ar` jv[gvd r[ ar gg;` ;vz` kolo` mexn rv g fvd r[o`a`.

APV NW KRUID - 3.3

Cemezw mow far bah atl agu lvv ;v mezd kco c[garv vmvpv. Vna rv joka lolo f`a mexz pv ar` o` joka.Nvn ar` lvzw mezd ine[gul .Nvna lembud rse ar cuyn f`a loo` ;nga f pi mexz pv.Cvn` pv nvlv ;na. P\a - 3.4 rv vma kn lvzw rv ine[gul mexa k;v bono f ol nvlvpv.

P|A - 3.4

;ene` awka	Lvzw r` numu	Muy\u r[	Mon far lvzw loo` svll cnab
1	Lembud rse		
2	smpo		
3	benvgar		
4	Soda f`a		
5	Cene f`a		
6	Bulu[		



Pte - 3.3 ([)mon far bh rvz` lvzw (g)morov ar gg;` ;vz` kolo` menexa.

A fanace pv ?

* Gma f`a rv pur` morov ;in rv nvna fo **njom gma** (acid rain) ko mv;`a.Nvn njom ko oknvv ;v huju` ;na? Hozo pe\e rv mvn` dgvla geneix noll,solphor dioksid ar nitrojvn di oksid gma f`a rv lvzwk;v jvmon krbonek njom (**nog` njom**), solphor njom ar nitrek njom rv bo folvna.Nvna kogv njom mexa gma okona ce pka foln, faru fere, ar munua` bni foln ko vn lvka ce ;jmohol lvka n` koo krabvza.
* Abu homoh rv mezd njom mvn`,okona rvz` numu de okse ribo nzuklek njom (DNA) vna abu homoh rvz` bni ,slwge,mvd rvz` r[,vmn ko` teekeza. Homoh kon fol(cell) bni rv goroj o\[ bni bo far rv ameno njom (amino acid) ar i;el bo far (fatty acid) ko mvn`.

BENE|AO -

Guru gurme ko ar fax ;na ce p\a 3.5 rv vma kn lvzw ko ;nga f pi letmos kgojo,ssw kgojo, ar mow far bh lvzw mexa k;v vna rvz` cvn` hobn ;na ptua ko bi k;v y fuba kopv.Ptua ko vna ko ol rekz ka.

Husezr - rokom rokom njom ar gg;` ko lgvd joka husezr cn` ce nvna ko bvraqje(corrosive) ar bba;a (irritating) hoba f iza) yuwr nw ka bugeza.

P|A - 3.5

;ene` awka Mon far bh	Lvzw rvz` numu	Letmos kgojorv r[	Ssw kgojo rv r[	lvzwrv r[
1	Lhr bulu[njom			
2	Lhr solphvt njom			
3	Lhr roo njom (nitrek vsed)			
4	Lhr vsetek njom			
5	Sodezom hidroksid			
6	Vmonezm hidrok sid			
7	Kvl sezm hidroksid			

3.3 Hoka;e[(nutralisation)

Mezd morov ar mezd gg;` lvzw ken mexa zn rv bina hoka;e[.Nvna ;v morov ar gg;` guyn ken otw v\` na.Nvna rv nma geneix ar lolo olla.Nvna f o **bulu[** ko mv;`.Bulu[morov,gg;`, karv hoka;e[hoba f iza.

Njom ar gg;` be;ar rv menexa f o hoka;e[ ko mv;`.Nvlv k;v bulu[ar f `a bizo` loo` lolo oll''.

Njom+gg;` bulu[+ f `a(lolo)

Njom bulu[(HCL)+sodezm hidroksid(NaOH) Jomvbulu[(NaCL)+ f `a (H_2O)

JAO KORV HOKA : E{

Kajerao -

Abu mnde lie rv bulu[njom nwom jeerao korv vsu lga;e[a.Nvna lna` zn rv fo cra kajerao` ;v vsu fuku bu a faza.Njom rvvd (antacid) jom k;v bu hl fu` na.

Mue hua` -

mue ko hua` kv bu rv abu homoh rv yuwr rv phormek njom lvkn njom geneixe ;v vsu hsu bua.Nvna cv;n rv jomvsoda karv klamen lvzw goso` ;a rv buygena.

Hara jobora -

hra jobora ko f`a rv mexa zn rv nvn rv mvn` njom f`a kv ojora cbaza . Hku ar vt` vt` jey ko nw nvna fo ka bugeza.Vna ;v nvna rv gg;' ko hvr k;v hara z;v oll ;n f'a foko hoka;e[iceiza.





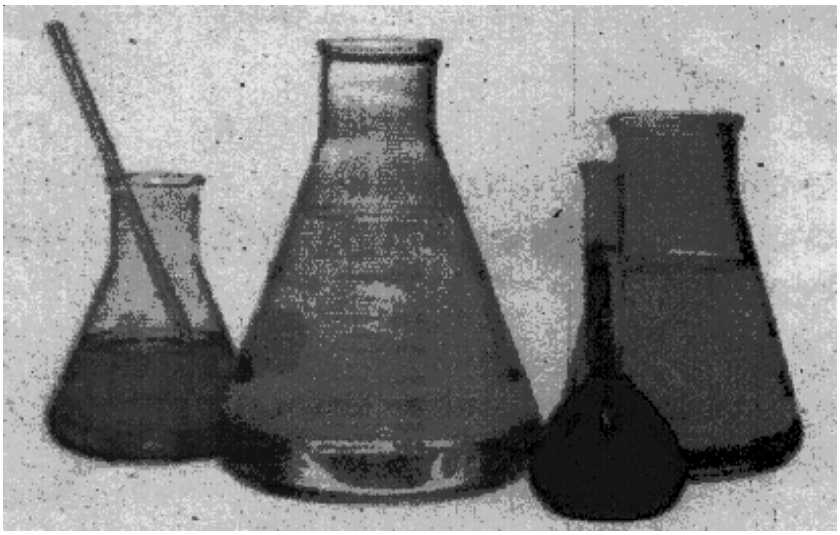
Ka jerao roga Hara dgvla

Pte - kajeraoz ne` ar hara jobora

Cvn` pv v;o kvda - ?

* Njom fo morov gvza,mvvr fo hvvr gvza ar bulu[fo mvvra.
* Njom leel letmos kv ar` f iz`,gg;` ar` letmos kv` leelvza.

* Okon geneix morov karv gg;`ao bno ;na,vna f o hoka;e[ geneix ko mv;`a.
* Morov ar gg;` geneix yrumv lgvd f o okon geneix f orkara vna f o ine[gul ko mv;`.
* Morov ar gg;` ken mexa zn rv,hoka;e[ k;v bulu[ o l l'`.Bulu[f o morov,gg;` karv hoka;e[hoba f iza.



INE : U{

1. Apeza morov ar gg;` geneix ko r` numu olvpv.
2. Morov ar gg;` be;r rv cvkn vg\om svg\om ko mvn` y f ubvpv.
3. Letmos kgojo celekko biza? Cvn` ko cekaza?
4. Hoka;e[cvn` ?ynu f ub loo` olv pv.
5. Cuyn f `a morov za / gg;`a / ce hoka;e[a celeka ;vpv atakarvza?
6. Nma xerma rv ju\e ko;` ;v mezd bn f ezm skm kulv loo` ,vn ine[gul geneix ko;v celeka pv onolvza kjei pv.
7. Ar` letmos ar leel letmos kgojorv mezd lvzw tvb k;v roo ka bo f ol jna,vn lvzw celekn` ;na kjei pv?
8. Y[ku\u xb f ken nvl k;v ;vhra xb f ol sree pv.

([) Cuyn f `a,gg;`,dkud f `a,————-

(g) Jojo,trtarek njom,morov ;oa,————-
(k) Leel letmos kv ar` , njom, ar` letmos kv leel,——
(q) Njom rvvd,kajerao` rvvd, klamen,————————-

9. Cvn` rvz` ;orw?
([) Hara jobora f`a rv mexan azar ;v nvna kv hoka;e[lga;e[a.
(g) Apvz` kajerao` korv f o, kajerao rvvd(antacid) gule pv jomvza.
(k) Bse mnde morov gv jomo` a`.

10. Okona teikeza?Okona lotoma, slz pv?
([) Potasezm hidroksid ar` letmos kv leelvza.
(g) Sodezom hidroksid loo` njombulu[ mexa zn rv bran keq hoka;e[ k;v bulu[ ar f`a ken oll lvza.
(k) Roo njom(nitrek vsed)ar` letmos kv leelvza.
(q) Gg;` lna` zn rv f ata buta hasua.
(j) Lembud rse rv lna`;v vsetek njom mvn`.

11. Apv kv apeza bo;ol rv njom bulu[,sodezm hidrksid ar cene f'a ;nga f pi vma kna,apv ;`a rv ine[gul lvka ;v mon f ar bh atl lvzw mvn`.Apv ko vna celeka ;vpv yrumvza?

O|~ RV B I E KURU I D-

1. Apv vn f ar rvz` cemezw hasa cena aguk;v,nvna rv njomn,gg;` karv hoka;e[cergalv pv.Se;ezr kolo` nvna jgr muleipv.
2. Medo rvvdranu f v^ kvza agu lee ;v ka jerao roga bexz rv jgare pv.Celeka;v bugena kuleipv.

Ypun ct`
BURAMVV :V LEJ~

4.1 Jey ar punurr koz ;v burm-

Ho\o ko'` jeneid nw mezd muy\u goron geneix f o lej`.Burmvv ;v lej' ko bizo` a`.Burm ko f o punurr ar jey koa` homoh koz ;v nmo` a`.Punurr koz ;vz` burm bexz rv azr ;vbu a f ana.Vnlvka k\a burm ar lugm burm cemezw jezu ko;` korv nmo` a`.Mende ar ber yre` lvkn ko;`z ;v yul ce k\a burm bvtao` a`.Vn lvka lugamvv ;v su;m boro` a`.Apv a f anace hatoz ;v yrgum su;ui ;vq lgvd okon yul ce k\a burm bu kere[v ;na vna celeka bizo' ;na?Lugm pukee ;v lugm su;m bor k;v nvna;v seleke x\e ko bie ;na.Vla bu naw` f o nvna bexz rvbu atkr lvvgv-

4.2 **K\a burm-** (yul)Mende,mvrom,beryre` vmn cemezw k\a koz ;`az ;v nvn k\a burm nomo` a`.Nvn k\a burm f lu` ar ibel gv;v k\a koa` homoh yrgum gv` reka za.Abu lvka gv mende koo br rokom izwl mvn`,jvmon ibel ar lpz yuwr izwl.Lpz izwlv ;v f o burm oll'`.Cemezw mende koa` f o sma lpz izwl sumwa.Naw` brse[ rokom rokom pvtvka bed f a ;v gono[an lpz izwl sumw ko bie ;na.Nvka n` f o **snw bni** ko mv;`.



Pte - 4.1 g f ur mende

Abu hr;ahsa rvz`mu;ed rijerv;nga f pi mende ko nvlo`a`. p\a4.1rv vmakna.

Cemen rokom abua` mende ko
P\a - 4.1

;ene` awka	Rokom mende	k\a burm r` rokom	Nmo` ;n rij r` numu ko
1	Lohe	Gono[an k\a burm	Rjos;han pqjab
2	Rm pur boser	Pndra r[	Zupe,vc.pe,
3	Ar`	Atvdvburm	Rjos;han, horezna, pqjb
4.	bkhraoal	Saal burm	Jmmu kxmer
5.	mroahde	Mota burm	gujurt
6.	P;onah f e	Moja gqje vmn	gujurt

Haato rv nmo` ;n k\a burm sbvn no` lvka gv mende burm ko ;na.Ondo` vt` k\a ko;` z ;vro burm ko nmo` a`. Hema\ozo buru ce r;w buru vn f ar l f k mule korv ber yre` ko;` z ;v burm koko nmv;na. (pte - 4.2) jmukxmer rv nmo;na 'o[gora' mvrom` g f ur, o[gora mvrom (pte - 4.3)'` g f urvv ;v ro burm nmo` ;na. Kxmer mvrom (pte - 4.4)'` g f ur vsu noroma. Nvnz ;v bizo` saal f o 'posmena' saal ko mv;`.Ywtu (pte - 4.5)'` g f urvv ;v zo burm oll'`. Kn f ua



Pte 4.2 Ber yre`



Pte 4.3 Awgora mvrom



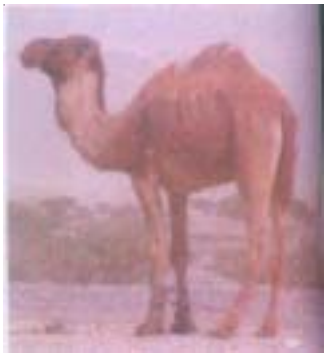
Pte 4.4 Kxmer mvrom



Pte 4.6 Lama



Pte 4.7 Alpaka



Pte 4.5 Ywtu

aphreka rvn ‘lma ar alpoka’(pte-4.6,4.7) g furvv ;v burm oll ;na.

Apv nw kruid 4.1

Okon k\a koa` g furvv ;v burm nmo` ;na,vnkoa` pte nmhunde k;v apvz` onol pu;e rv jua` hunde ;a pv.Okona ka nmo` ;na vna pu;e nvl k;v bvwga bwge bier pv pv.

Apv nw kruid-4.2

:’ rv okon f exum rv okon k\a koa` z ;v burm ko ollv ;na olv pv.K\a burm ko lgvd f o mende koko asul ;na.Akoa` g furvv ;v burm ko ollv ;na.Vlabu mede asul ar burm soqjoko bexz rvbu atkar joma.

Mendeasul -

Apv juf e jmukxmer,hemaco\o prof vx,y;;orqco\,oru]aco\ prof vx, sekem rvz` buru be;ar ar horezana, pqjb, rjos;han, gujurt rvz` sman vn f ar rv mende gohto ko nvlo` a`. Mende ko f o ;sd punurr ko joma.Mende ko ;sd ar p;h ko pur` ko joma. Vn loo` ;v nvko dhle suid, gvlv gwgi ar kz ko loo` bulu[koko vma ko ;na.Rbw f en f o mende ko go^ rv ;ol k;v nvn dhle suid, p;h, roobusu' vmn ko vma koa.

G f ur rvv ;v k\a burm bni -

Mende izwl ko vsu rokom;v sbar sgom k;v k\a burm ko ollv ;na. Vnz ;v rbw lej` koko bie ;na.

Vtv` bara -

Barande ko hozo caa\a lvka mende ko jvtv se[ge ko hozo koa (pte - 4.[.). lme;w homoh rv g f ur ka;in rvzo mende ka rbweza.

:z[bara -

Nvn bara rv rcama kn g f ur kv mezd mrw lvkn hndua` rv ko sobod spa za (pte - 4.8.g.) .Nvlv k;v g f ur rv jule za kn dgvla, tkara ar duyl cvtvr ko oll v\` a`.Nvbr f o nvn spa pnite ko f o koh\o ko;v ko spz ;na.

:vhra bara -

Spa k;v hara rv g f ur ar juleza kn yuwr koko ;nga za. Vn cnb hu\e[mrw ;vz` g f ur koko sla ;nga za.

Ypun bara -

Sbvn g f urv ;v conov conov g f ur koko ;nga za. Apv z` yrgum su;ui(suitr) korv mexa mexa vnkn g f ur kopv nvln gvza ;orw.Vn hu\e[ hu\e[ g f ur ko ;nga k;v ondo` mexa ko ;se roo yraza.Naw` f o burm bie zna.

Mo]v bara-

Mvrom mende koa` r[ma;v hvw f v,pude karv pndra r[,mvn f o roo zn burm kv snw lvka ;v vsu rokom r[;vko r[vza.

:urui bara-

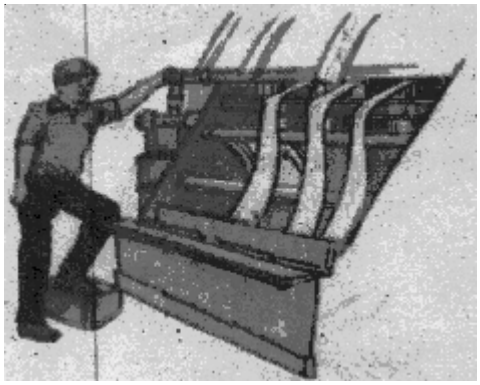
:urui bara burm ko sb sv[gvr kvv ;v ptu k;v su;m ko borvza. (pte-4.8.q.) su;m bor kvv ;v jele[jele[;vz‘ f o yrgum su;ui ar f uwgue ;vz‘ ko f o lej‘ ko b ie za.



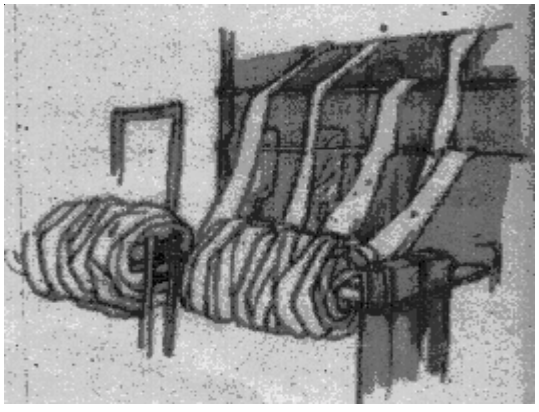
Pte - 4.8([) mende rcm



Pte - 4.8 (g) Hndua` rv spa



Pte - 4.8 (g) Koh\o ;v g f ur spa



Pte - 4.8 (k) su;m bor o l l vmn.

Krke rvz` rowco

K\a burm hara korv pitek;v abu fexum rv vsu ho ko asulvn ;na.Mvn fo hara rv nvn g furvv ;v burm ollv fepelw nvna spa k;v hu\e[mrw'` ko sla ;nga, ar conov conov ;vz` ko sla ;nga k;v rooz ;n kmeza ko an;hraks mvn ;vn bhiros ;v to` o` ;vz` boro mvn`.Neku foy fure o;[;oa ce mzom ajvdw roga ko nm koa.

Apv nw kruid - 4.3

Mende g furv ;v biza kn yzu rvz` bugen vdka bexz rv apvz' ju\e kolo` bvkol b f a b f e bie pv.

A fanace pv?

K\a burm nm lvd pur` mende asul ;n fexum ko z ;v cein ma[, ostrvleza fosr ar bharo; ;vsr tzvd rvkoa. Mvn fo nezujelnd rv sbvn koz;v bugen ar gon[an k\a burm nmo` ;na.

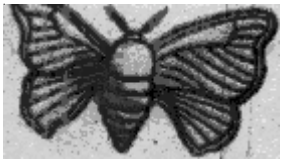
Lugm burm(seleke) -

Lugm'` pukei ;v lugm su;m ko borvza.Su;m nm lgvd nvn ce fu anasul fo **lugm a]a** ko mv;`.Re;a geneix ko;v bizo` ;n yzu koz ;v lugm lej` bugen y;arwa.V[gm, jezm, karv gyuqmv ;vko ;ola kd lugm lej` nvlv pv. Rokom rokom lugm lej` korvz` kule jompv. Lugm lej` bni bexz rv jgr prkz azr ;v bogo\o lugm bexz rv atkarv vsu goroja.

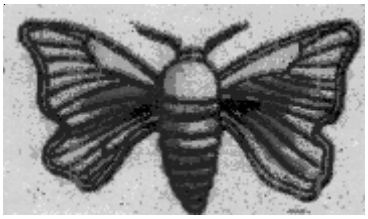
Lugm ce fu'` jebon svkor

P;ane ko jaroma.Nvn jromvv ;v ru;ue zo ce fu gv **lugmce fu** ko mv;i za.Nvn ce fu gv` mrwo` a`.Ce fu` mrwv zn cnb bogo\oa`,bogo\o zn cnb ;olo` a`.:olo` azar ;v bogo\o bezur

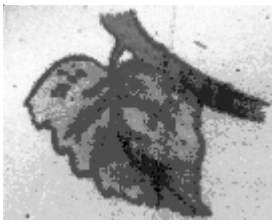
;v aa hora su;mv` caew za. :olo` fepelw vn bogo\o V'` boo` pt` nwgale '8' lvk` bezurvza ar bni bo far su;m ;v jlomv` ;v[v za. Vna gv hozo to` zn rv fo kv\v` zo` ;v lugm burm bizo` a`.Bogo\o lugm vsu aqja'` ;ol vsvdvna. :ol vsvdv zn rv fo` lugm ko mv;iza. Nvn lugm gv bo fol k;v gewgu` bizo` a`.



Mogy



L\eza



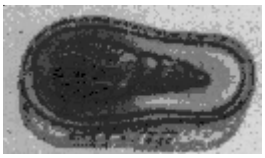
:u;uy skm rv lugm jrom



Ce fu



Puke be;r ge[gu



Puke be;r hara;n ge[gu

Pte-([) Tera ar (g) P;ane(k) ;u;uy p;h rv p;ane jrom,(q)lugm ce fu(j)gewgu(c) biza kn gewgu.

pte-4.9 Lugm'` svkor jebon.

Lugm ce fu'` pukei ;v lugm burm nmo` a`.Mvn fo ;nga f pi lugm koz ;v ;nga f pi su;m oll'`.Jvmon mogy,l\eza ar ;u;uy lugm.Odexa rv ;u;uyi ;v seleke ar lugamvv ;v lugm lej` bizo` ;na.Pur` fo ;u;uy lugm ko a]a ko ;na.Nekua` s;m fo sbvn koz ;v vsu norom ar lvbv`gvza.Nvna apn snw lvka gv r[ f izo` a`.Lugm a]a krke abu hr;hasa rv vsu munui ;vz`

;na.Akare[lgvd abu f exum rv vsu bugen bugen lej` koko bi;na. Abu odexa rvn a f ebse ko lugm a]a ;vko asulvn ;na.Lugm a]a mezd lphn o\` kota]e (cottage industry) ;na.Caxo p ite loo` ;v lugm a]a buge gno` ;v h;u korvn rv[gv` rbw ho ko asul nw pur` arxalv goroja.Nvn lugm a]a lgvd f o pur` tka krca, tvnvd,ce hecer sv[gvl korvz` gorojo bno` gvza.Vna ;v buru be;ar pa korv lugm a]a hoba f i gvza.

Lugm a]a ar lugm lej` ;vq korv vra ko vsu ko julu[ gvza.Pukei ;v norom burm oll k;v,cnb puke ko ;eke k;v su;m ko bor ollv ;vz` o vra kogv biza.Nvna ;v rij rvz` be;e bu;urr rvz` kvntv` hobn ;na.Lugm a]a rv cein f exum anazr rv mvni` rvzo gv anazr f exum ko lvka rv bharo;oo mn`i gvza.

Apv nw kruid - 4.4

Vsu rokom lugm su;m ko sgom hunde k;v apvz` onol pu;e rv si;ebz pv.A f ahn ho kolo` ;v mogy,l\eza ar ;u;uy lugm su;m ko yrum jompv.Vt` su;m kolo` nvna ;ula mlaz pv.Vsu rokom lugm koa` puke ko nmhundei pv.

Apv nw kruid - 4.5 - Je;a burmvv ;vz` lugm su;m ar mezd re;a burmvv ;vz` su;m, mezd cnb mezd a;ar ;a pv.Nvn rp` r[go soan rv ipm pv cergalv ;n ace?Vn lvka gv mezd g f ur su;m mexa yrub lvka pv.Re;a ar je;a ken rvz' rp` r[go xoan cvn` med gvza? Apvz` hnl vmv pv cvn` rvz`?**A f ance pv?**Naw` brse[ vsu rokom abga geneix ko;v je;a lugm burm bizo` ;na.Vnz ;v vsu rokom yzu ko bizo` ;na.

Apv nw kruid - 4.6

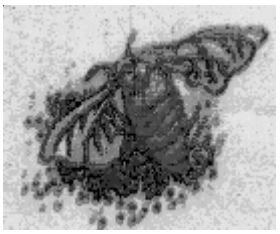
Lugm'` ce f ui ;v gewgu hb` rvz` jebon svkor bv[ga bwge sgom k;v bezur ;v jua` hundei pv. Mu;ed bono f ol rvz` numu ol k;v sr cein ;v cundul ;a pv.Nvn jebon svkor apv ;vgv ol y f ubv pv.

Pukei ;v su;m-

Lugm su;m nmv lgvd, lugm ko a]a k;v puke nm hunde k;v su;m ko bor oll za.

Lugm a]a-

Medoo p;ane mexa ;v moz hesei ;v lna` jo[v jrom f iza.Nvn jrom ko f o nma dla rv vm hunde k;v rnu ;vko goso` k;v lm` skm rvko tepvn za. Vn tepvn ko mvla lvkan` rv ko horsod ;a koa.Ai se[ge ko;v jromvv;v ce f u ko ru;ue ollo` a`. :u;uy lugm ko rv f o aqja no` gvko ru;ue ollo` a`. :u;uy rvnko rv f o dla rv p;h hv` huju` k;v ko vma koa ar f vxe ko rv f o f aru rvko a]a koa.Neku f o lugm ce f u ko mv;a koa.Mrw k;v mota gota zn rv f o ko bogo\o lugm ko mv;a koa. :u;uy lugm ko f o me cndu` rvko ;olo` a`.Dla korv gv gopod bi k;v ko ;olv na lugm korv f o f aru ko;o rv gopod bi k;v ko ;olv na.Bogo\o lugm su;m ciw vsvd k;v ;ol vsvdvna,cnb f o gewgu bina.



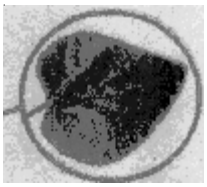
([) L\eza jrom



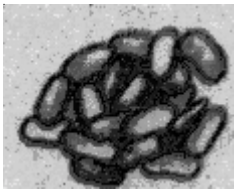
(k) :u;uy lugm p;h jom



:u;uy f aru



(g) :u;uy p;h



(q) :u;uy lugm

Pte - 4.10 lugm a]a.

Lugm su;m rvz` cergl fo cuila hoba lvna teek ;vkakje fizo`a`. Cein fexum rvn ho koa` khne lvka hexb ;v fo, raja hua[-te mexa az` bki rv honor ;n ime;w ;u;uy p;h ko dvndv zo` ;n` nvl k;v bki horo ;ne` kv nvlv lgvdv` kjezae za. Vn bki horo ;ne` nvl kvd koa ce cemezw pude punde ce fu ko p;h ko jom cbz ;na ar bara bte ;n ko ;ol hundeza kna. Mexa` vnz ;v b;are pere` su;m oll ;vz` Vnvl kvda. vn cnbv ;v cina fexum rv lugm su;m kota]e ko vtv` zna. Vxu xerma hb` vn fexum rvgv ti kvna. : zom fo suaz suaz ;v lba feza ko gota ko ne;er kvda.

Abua` fos;ur mna;e[ xahr hora lvka ;v fo, ypuw fub mnoa luku-lukume ;eken gv mgv porob mna;e[ rvz` ypun mh hv` skm muse[ roo skm otw huju` lvn ;v luku-kume'' genezu` fpl lvna, vn gezu` gmw rvz` svzw ata krv loo` aa` b[ga 'fnxre' ;olo` ;n bogo\o lugm ruupu ;v tvnvd svzw cla ;uyd kena mvn fo lej` ;vq ko fo vn tvnvd svza gv sv]a k;v vsu cnb ;vko v;o kvda. Lugm su;m rvz` cergl fo ime;w korvgv ;ikvna.

Su;m bor -

Pur` lvka lugm ko (ayre oll ko) med;` k;v, mezd hndua` lvkan` rvko ;eke gov koa, karv lolo f` rvko kqju koa, vn ;v ;se bh k;v ko bor koa. Puke lugm ko fo su;m sedo` a`. Nvn su;m ;vgv lej` ko ;v[v za.

Cvn` pv v;o kvda -

* K\a burm ar lugm burm fo jey koa` z ;v od[ ;na. K\a burm fo mende, mvrom ar beryre` ko;` z ;v nmo` ;na ar lugm su;m fo lugm koz ;vgv nmo` a`.
* Yuwtu, lma, ar alpoka koz ;vzo k\a burm ko nmo` a`.
* Abu bharo; rv g fur lgvd fo mende ko asul ko ;na.
* Mende g fur fo mende ko rcm k;v ko spa za vn ;v hu\e[mrw` ko fo ko ;nga za. Fu[gue y;arw ;vz` ko fo ;nga rv roo k;v lej` ko ;vqvza.
* Lugm ce fu mrwv zn ;vne fo bogo\o lugm ko mv;iza.

* Lugm burm fo bni bo far rv ;vz` ;na.
* Lugm bor k;v su;m ar su;mvv ;v lej` ko ;vqvza.

INE : U{

1. Okona teekeza? lugm ce fu medo -
   ([) jrom (g) ce fu (k) Jrom ar bogo\o (q) jromo bno ce ce fu bno
2. Okonz ;v k\a burm kabvtao` ?
   ([) Ber yre` (g) yuwtu (k) mvrom (q)g fur sv;a.
3. P[ka ko pvrv` ;a pv.
   ([) Yul yzu.....burmvv ;v nmo` a`.
   (g) Sbvn koz ;v gon[;vz` g fur.....mende ko;` z ;v nmo` ;na.
   (k) Rcm kvv g fur ar jua` kn yuwr kv spaz fepelw vnz ;v duyl, dgvla, ar.....geneix ko oll v\` a`.
   (q) Bogo\o lugm`.....hozo ;v to` zn rvgv su;m bizo` a`.
   (j) Lugm lej`.....lvkn su;amvv ;vz` ;na.
4. **'[' xri ar** **'g' xri ken sgie pv**

'{' xri	**'G' xri**
: u;uy p ;h	Bogo\o lugm
Cv;n yuwr	Bkud ce fu
Lugm ce fu	Lugm ko jomv p ;h
L\eza	Lugmlej`
Beryre`	: ebo; ar l fk vn far

5. Mende g furvv ;v burm bni bara ko teeke ;v oly fubvpv.
   [. Fu[gue` y;arw ;vz` ko fo ko ;nga ollvza.
   g. G fur ar yuwrv ;vko spa ollvza.
   k. Lej` ;vq.
   q. Su;m bor.
   j. Hraa kn g fur ko rcmvza.
   c. Burm rvko r[vza.
6. V;om kute rvz` xb f ken nvl k;v koqjv kute rv rvz` sgi xb f olv pv.

[. Mende g fur, k\a burm, lugm...g. lugm, lugm lej`, ;u;uy.....
k. Mende, ;sd, lugm ce fu.....

7. ([) jrom (g) gewgu (k) ru;ue (q) bogo\oLugm ce fu'` svkor jebon ([.g.k.q.) teeke lvka ;v olv pv.
8. Tutuka ;v hlv pv.
([) Lugm (g) Mende'` jom` (k) Lugm a]a (q) Rje jonom
9. Teeke ce bno cenz pv.
[. Mendez` mota g furvv ;v gono[an burm nmo` a`.
g. Rbw fen mende ko ;ol jogao k;v kz,;sd,busu` ar p;h ko vma koa.
k. Fu[gue burm ko fo lej` ;vq lgvd ko ;nga za.
q. :u;uy lugm p;h jom ;n ime;a yle f` joro kvv ;v ;olvna.
j. Lugm su;m ;v yrgum su;m ko bie za.
10. **Cvn` rvz` kjei pv?**
[. Rbw fen mende g fur kko rcm ollvza.
g. Buru be;ar pa korv lugm a]a vsu buge;v hoba fizo` a`.
k. Lugm su;m bor fo gewgu pukei ;v ayre` oll rv ko ;eke govi za.
q. Yrgum su;ui(suitr)rv mexa mexa vsu fu[gue fu[gue burm ko nvlo` a`.
j. Lugm lej` rv[gv` hoko bi ;nrvzo ;ola ka fo kko nvlo` a`.
11. Mende g furvv ;v k\a burm cele ka ko ollvza bara o\[y fubv pv?
12. Lugm ce fu'` svkor jebon rvz` bv[ga bwge onolv pv?
13. Lugm a]a celeka hoba na olv pv?
14. Lugm a]a rv abu a febse koa` benerr bexz rv olvpv.
15. Apvz` apvv rokom xu;ui mvn`.su;m rvz`,g fur rvz` ar lugm su;m rvz', me xerma rv okon ime;a okona pv xu;ui na ar cvn` rvz` olv pv?

O|~ R~ KRUID-

Odexa rvz` lugm a]a;n vn farw rvz` numu olv pv.Vn;` rv celekn lej` ko nmo` a` olv pv.

Mo]vct`
JOM JEID

Hol[jey, jeyar punurr koi fek;v jey sokoa ;ezara kna.Nvn jey korv rokom rokom pitecluakn ;ina. Hra, benerr, jonom, jom nuy, svsvn, jom jeid, szvd vmn hobn ;na.Nvna ko nw fo pv\v` rvz` goroj mvn` .Pv\v‘ nwomv ;v nmo` ;na.Vna mvn;v snm jey ko nwom ko jooma.Mezd jey lgvd jom‘ rvz` goroj ar jom` korv mvn` rokom mu;e ko bexz rv azr rvbu a f ana.Vlabu ondo` mexa bu phm rua lvvgv.

5.1 **Jey nw nwom r` goroj -**

Nwom jom kvvrv okon okon anaxe ko pura na, vna atkarv nw l;ar p\a kv nvlvpv.Jae jomor` onol pu;e rv p\a bi k;v nwom ;v cvn` cvn` anase pvrv`n ;na ollv pv.

P\a- 5.1

Jey ko nw nwom r` goroj

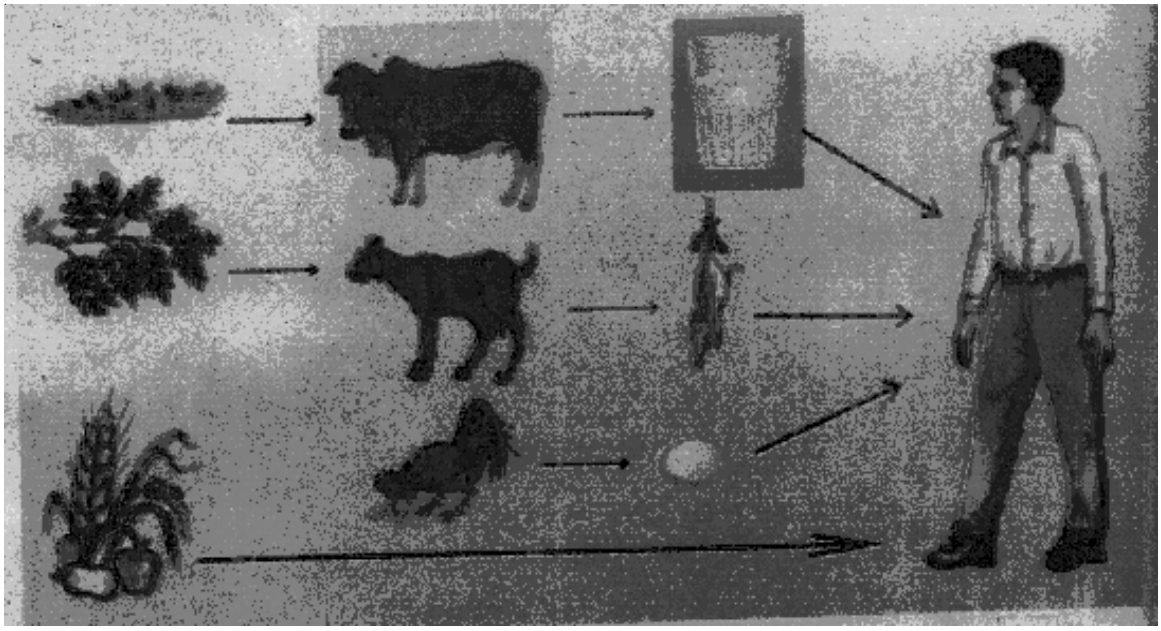
* Nma kon fol(cell) bni ar homoh bni
* Pite pv\v`
*
*
*
*

Nwom rvz` gh fe fo hoba zna- Nu`nu` bo far,bni bo far ar i;el bo far, jeneid bo far ce ( vitamin), se;uad bo far ce k fan bulu[ ar f`a. Mu;ed gh fe geneix ko bexz ;vzo bu a fan gvza.

5.2 **Jey gohto ko nw nwom-**

Abu sbvn rokom nwom kobu jom ;na.Vna ;v abu fo jumbui ko mv;a bua. Jvmon-mnde, rute, joo ar y;u geneix vmn punurr koz ;v bvtao` ;na.Vnka gv jelu, hku, ;oa, jrom vmn fo jey ko;` z ;vbu nmv ;na. Mvn fo yre`, mvrom ,kv\a, mende vmn ko fo ;sd ar punurr gvko jom ;na.Vna ;v neku fo punurr joomko mv;a koa.Hku ar xem ko fo vsu rokom punurr koz ;vz` geneix ar yru yske koko joma.Vn lvka gv vt` jey ko ;ra fo jomjelu gvza ko.Jvmon kula, se[kula, lvkn ko fo punurr jom koko joma.Hednmv rvbu cergalv za ce nwom nw snm jey ko smw ;v karv svkor ;v (jomjelu ko karv jumbui ko) punurr koko goroj ;vza.(**pte-5.**1)

G fvd punurr ko nwom nw jae cv;n rvzo kukud (depend) kko ;ina.Pur` ;v p;h rv ;in g fvd pu;uyi ;v (chlorophils) punurr V'V ;vgv noll ar f'a jvmbvd k;v nu` nu` bo far ko` biza.Vn nunu` bo far gv faru V'` homoh benerr pite rv aguza.



Pte-5.1 nwom nw punurr ko cv;n rv kukud

Apv nw kruid - 5.1

P|A - 5.2

Hola ;vr ;`az ;v cvn` kopv joma kda?								
bsezm	gh f e	Okonv ;vz`(jey ce punurr)	: eken	gh f e	Okonvv ;vz`(jey ce punurr)	azub	gh f e	Okonvv ;vz‘.
Y[ku\u								
ylw								
Foxr								
ylw								

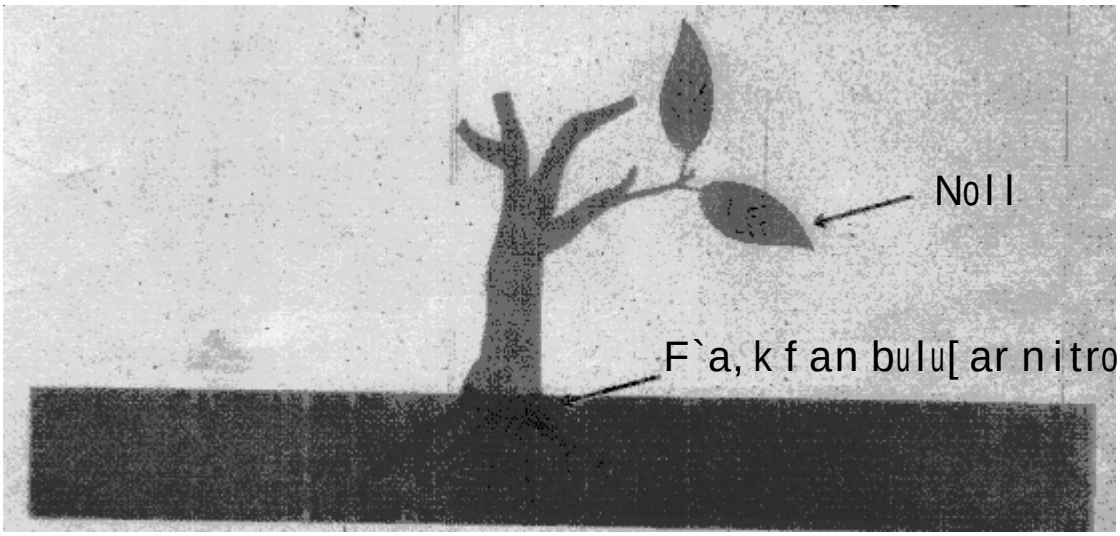
Cv;an p\a z ;v B atakr kvda ce abua` nwom ko f o punurr ar jey ko;‘ z ;vz` ;na.

5.3 **Punurr ko’` jomjeid -**

Jey ko lvka punurr koa` f o ;ei kta ar aa bno` a`.Naw` f o kono` hobn ;na ce punurr celeka ;v nwom ar okon lvk` nmv ;na?Pur` f o jwv ;v f aru punurr ko omona kno` a`.Hsaz ;v az` nwom nmo` ;na.Ondo` vn cv;n rv abu bo f ar, gure`, ar f `a bu f ulv ;na.Nvna koz ;v punurr az` nwom r` gh f e ar k f an bulu[vmn` ko nmv ;na. Vna ;v V’` benerr ar bni buge;v hoba na.

Apv nw kruid - 5.2

Punurr ko okonv ;v k f an bulu[ko nmvza ? Vt` pu;e ko p\ao k;v karv guru ko kule k;v numulvka bie pv.Nvna lgvd se;ezr gare,bgn gare rvn ce;era ko lo` jpagr pv.F`a ar k f an bulu[ loo` punurr lgvd noll ar nitrojvn ko f orkr ;vza.Nvna sbvn gh f e punurr koa jom jeid nw f or kara.Vna ;v nvn gh f e ko f o jeneid ko mv;`. Jeneid koa` ypujn ar nwom bni rv lga;e[gv punurr rvz` jomjeid ko mv;`.



Pte- 5.2 Punurr koz;v rokom nwom ;usw

5.4 **Punurr koa` nwom bni-mskl pozvd-**

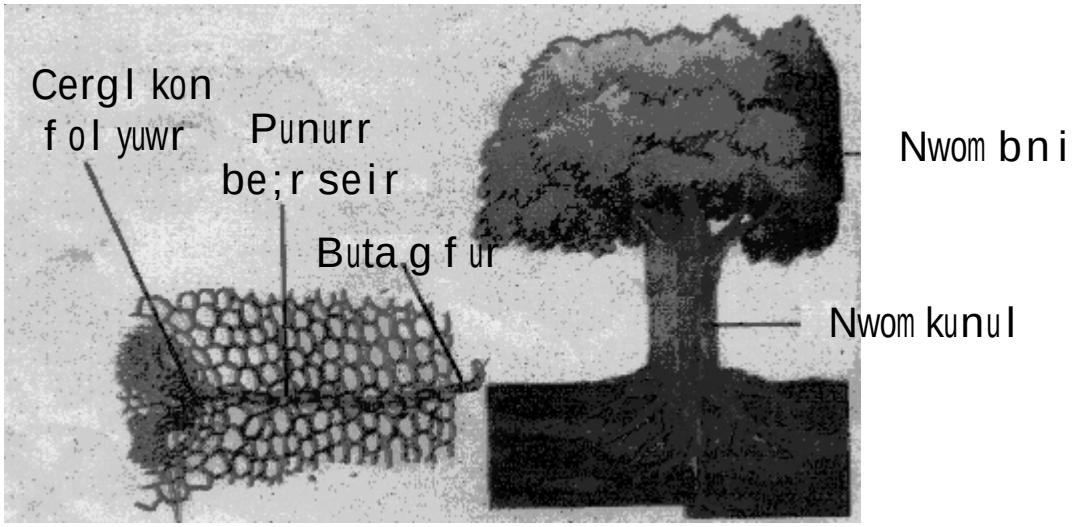
Vlabu cergalvza punurr ko sbvn f`a hsaz ;v jvmbvdv f`a ar k f an bulu[ar p;h ;v hozoz ;v srubo` ;vz` noll okon rv` ceka za.Vn f`a ar k f an bulu[ko okolvka ;v f aru cv;n pa ;v rkb ;na vna mezd be\ay lvvgv.

Apv nw kruid 5.3 -

Mezd horogoyra f aru p\ub k;v buta buge lvka cpe spz pv.Me c[ga bugen r[f`a rv vn cpe ;d horogoyra buta kv dubuei pv.Sm c[ga vn glas f`a cemezw gh\e rv jvtvrv vm ;a pv. Okon hora vn r[f`a f aru rvz` okon pa ;v svno` a` nvlv pv.

Nvn be\ao rv bu a f a kvda ce buta pa hora huju` lvn f`a ar lvzwakn k f an bulu[butz ;v ko;o ar ko;oz ;v p;h pa ;v bvta na. Butz ;v p;h hb‘ mvn` purr nle ;v vn r[ kolo` vn jeneid ko purr rkaba. Purr kow f ol ko i f e k;v vn purr nle biza kna. P;h rvz` conov conov pu;uy ;v hozo pe\ee ;v noll ko` arjao za. Vn pu;uy f o s;om ko mv;`. G f vd p;h rv mvn` g f vd pu;uy ko ;ina. G f vd pu;uy sewge ;` az ;v jvtv arjao k;v sewge pv\v` ;v p;h noll ar f`a mexa k;v nu` nu` bo f ar ko` biza. Nvna rv mrxl pv\v‘

;izo` ;n;v,nvna mrxl pozvdkomv;`.P;hz ;v nwom faru rvz` gotamuleckur k;v faru rvz` berrar bni hobana.



Pte 5.3 ([) Punurr koa` f`a ar anasul kunul (g) Nwom kunul .

Apv nw kruid 5.4

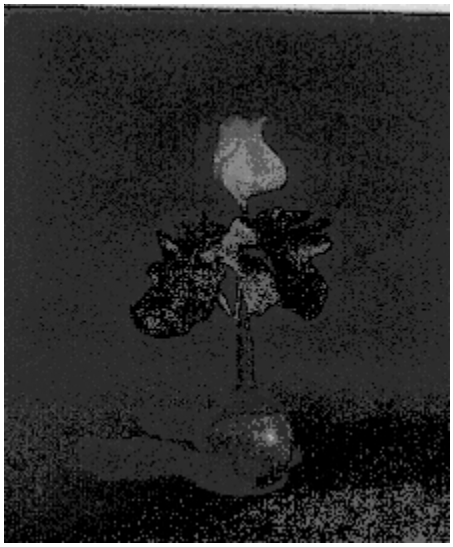
Bareza bh ctu karv vnkn` jv;n punurr ken rvzo somn somn p;hn ;vz` ken i fei pv.Mezd ctu pur` no` 72 gu\e jvtv to`o` lvkn tzvd rv rekz pv.Vnka gv ondo` mezd fo 72 gu\e jvtv gv kato` o` lvkn jgarv rekz pv. 72 gu\e cnb bareza ctui ;v momoza p;h tov k;v ;nga f pi speret rv jobv ;a rv fo p;h rvz` g fvd r[oll v\` k;v nvlv pv p;h pozo gv nvlo` a`.Naw' fo jvtv to` lvd ka jvtv to` lvd p;h ken azoden lvzw rv mexa ;upu lvka pv. Cvn` pv nvl kvda oll rekz pv. Okona jvtv kav to` lvda,vna fo 3,4, ma jvtv to`z jgarv reka ;a pv. Azar lvka vn p;h buge;v speret rv jobv ;a pv.Cnab ;v aizoden lvzw rv jobvv pv.Ceka zna ol rekz pv. (**Pte- 5.4)**

Aizoden lvzw rv jobv kvd ;v-Jvtvto` lvn p;h celeka zna ar jvtv ka to` lvd p;h celeka zna nvlv pv. Jvtv ka to` lvd faru kv jvtv rv vm k;v p;h kv azr lvka be\ao z pv celekao` a`.Okon gh fe aizoden loo` mexa znrv r[bo fol k;v leelo` ;na nvlv pv. Apv ar` ssw,plpoz[gv faru nvlo` a`. Kono` apvlvna ce nvn p;h korv fo mrxl pozvd hobana ce bno?

Sre;v f o nvlvka vt` r[ p;h rv g f vd pu;uy lo` ;v mrxl pozvd k;v nu`nu' bo f ar ko nmjoma.



([) Jvtvrv



(g) Nub` rvz` bh tuk`

(pte 5.4 - mrxl pozvd rv mrxl gorojo` ;n bareza f aru)

F`a	noll	jvtv
+	⟶	nu` nu` bo f ar+je f an
(Hsaz ;v)	(hozoz ;v)	p;h r` g f vd pu;uy

Mrxl pozvd r` bhre

C;n rv y f ubvzn kruid rv purr nu`nu` bo f ar ko bie za, ar vnako hundezn cnb gota na. Snm jey goht ko lgvd nwom hba na. Nvnz ;v mrxl pozvd rv je f an o l la. Vn je f an snm jey goht konw se f w korv lga;e[;na.Nm;um f obu atkr kv f a ce g f vd punurr ko jegoht ko lgvd sma jom` f o bno nwom loo` szd se f w lgvd je f an ko vma bu ;na. G f vd punurr ko mrxl pozvd ;v nejon lgvd nwom bi f i ;n hesb ;v nmjome` ko m;i za. Mrxl pozvd ka f i ;n cemezw punurr ko, hol[jey ko, ar snm jey ko vmn f o kanmjomko ko mv;a koa.

Apv nw kruid - 5.5

Ju\e kolo` mexa k;v guru ken` ko\[rv mondo jp` rvza, bh bgn, karv faru punurr gja\a pa svno` pv.Vn;` rv rokom rokom faru ko cenz pv.Vna ko rvz` numu oljogaoz pv.Kpv yrumv rv fo vna rvz` p;h,ko;o ko agu k;v guru keq yrum ire ken pv.Nvna ko olreka jom pv.

5.4 **punurr rv nu`nu` bo far bvgr vt` nwom koa` bni -**

Nunu` bo far bvgr punurr rvz` vt` bo far ko fo, bni bo far, i;el bo far ar jeneid bo far ko vmn bizo` a`. I;el bo far ar jeneid bo far rv, otw, je fan, noll ar pv\v` ko lga;e[a. Mrxl pozvd biza kn nu`nu` bo far lvkn geneix rvz` lnasur rv rokom rokom lvka ;v i;el bo far, ar jeneid bo far bina.Mvn fo bni bo far rv nitrojvn ;ina. Abu a fana ce hozo pe\e rv ypun p\`z ;v apvv p\` nitrojvn mvn` rvzo pniterv bno' ;v punurr ko nvn` ako ;v kko nm fiz`.Vnrv fo celeka ;vko nmv ;na ;orw? Cemen rokom hol[jey ko hozo pe\ei ;v re;a o\[;v ko nitrojvn svll rvko plta za. Hol[jey koa` gonov cnb buta pa hora punurr ko f`a loo` ko nm fi;na. Ondo` gv punurr ar jey ko'` gonov cnb soza k;v hasa rvko mexana, vnz ;v nitrojvn svll hasa rv mexana. Apv nvnao pv i;uan gvza ce,se;ezr(farmer) ko okon gure` bo far ko vmvza vn rv ka fan bulu[ar nitrojvn ko ;ina.Apv bni bo far okon punurrrv ;v lna` pv nmv ;na kjeipv?Rvtv` rmba, cna, muge,rvza\e lvkn` koz ;v,pur` bni bo far ko nmoa`.Vn faru korvz` buta rv med rokom hol[jey fv[ga ne` lvka tina. Hozo pe\e rv nitrojvn rvz` ata lvka ;v nvn hol[jey ko vn punurr koko nma koa.Vn lvka cemezw leel g fvd g fvld ;v hozo pe\e rvz` nitrojvn atao` a`.Ata kn nitrojvn rvz` svll surpud k;v punurr ko rokom rokom bni bo far ar tov njom ko pozvdvza.

5.5 **Vt` lvka ;v jey jeneid -**

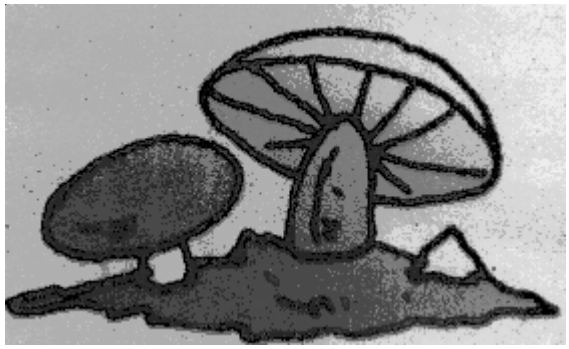
Azar rv kjeza kna ce g fvd punurr bgv k;v snm jey gohto vt` ko cv;n rvgv ko kukuda, vn ko fo kanmjom ko ko mv;a koa.Nekua` g fvd pu;uy ko

ka ;ina.Vna ;vvnkoa` mrxl pozvd pv\v` bno` a`.Snm ydtul (koboko) ko ;ra mra foka nmjom ko ar mra fo lsur hol[jey.Vn k;v sbvn jey(cemezw proktojoa) ko bgv k;v cemezw ka nmjom punurr (jnse[,xum, jnap`) nvlvkn` ka fi ko cvrvbv za ypun lvka jvmon - soza jom,ka fine`, fv[ga ne` ar jom jeneid. Vla bu vn jeneid ko bexz rvbu jgarvza.

5.5.1 **Ypud jom jeneid-**

Abu yd bu nvla kda ar joma kd gvza. Lembud cok`, pulao ld ar gvdakn joo korvz` bya kn` kobu nvldgvza. Yd ar by ken fo g fvd pu;uy bno` punurr ;na. Neko cele k;v akoa` jeneid bie ;na,okon korv ko ;in ;na? vla bu jpagara. Gma fen okon rv faru, ko;o,p;h,busu`,;sd ko vmn soza kno` a`,vna korv yd omono` a`. Vnka gv bse jom` geneix, komo\a cok`, yuwr jo;a korv by a kn` pv nvld gvza. Yd ar by ;vza` ko fo ydtul ko mv;`. Nvn jey ko med rokom yupud rse(pcoko roso)ko biza. Nvn rase ydtul kute mule rv mvn` rvgod geneix(jote\o)ko mule(soro\o) rua za. Vn cnb vn mule geneix ko yd ar by lvkn sozajom jened ;n ydtul ko cvrvbvza. Cnb fo akoa` jom jeneid rv ko aguza.

C;om lvkn yd

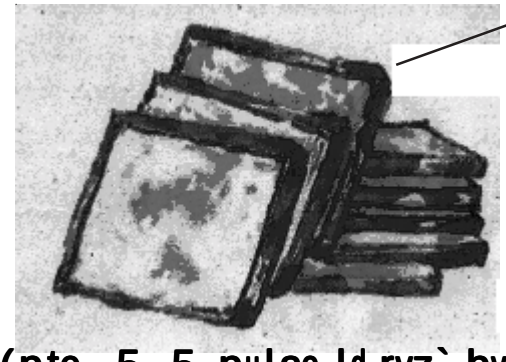


Pte - 5.3 cemezw ydtul lvkn punurr ce yd ko

Apv nw kruid - 5.6

Mezd pulao ld (payw rute) agui pvvn ;]e cv; n rv joka f `a ; erpe ; a pv. Vn ; ]e f o nub` tzvd rv jogao ; a pv. Brse[apv ma f nw vn pulao ld kv nvl rua lvka pv. Lvns karv hol[nwvl koh\o (o] ubekhzo] o jon ; ro) ; v nvlvpv.

1. Pulao ld rv cvkn bono f ol hoba kna?
2. Hol[nvvl koh\o rv celeka nvlo` ; na?
3. Celeka soan ; na ; orw?olv pv.



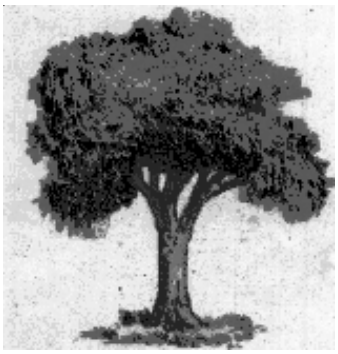
(pte - 5.5 pulao ld rvz` by)

Cemezw ydtul ko abua` lgvd bugena ar cemezw f oko kraba. Ydtul ce yd abua` bnibo f arn yd ; na. Pvnselen mvno ; n vn jey abu pvnselezm ydtulv ; vbu nmv ; na. Pulao ld bi lgvd ixt kv bvke[lupu` lvka ; v ko reka za.

5.5.2 **Jnse[jnap` - (porojebe poxo] o)**

Okon punurr ko vt` koa` cv; n rv kukud k; v ko jom jeidvna vnko f o vt` asul ko mv; a koa. Nvko f o punurr jomko lvka, vt` koa` ; v sbr muleza kn nwom koko joma. Rokom rokom punurr ko jvmon - Xum, jnse[, jnap` ar jey plasmodezom ar roga bie ; n jey hol[ko vmn.

Faru cv; n rv jnse[



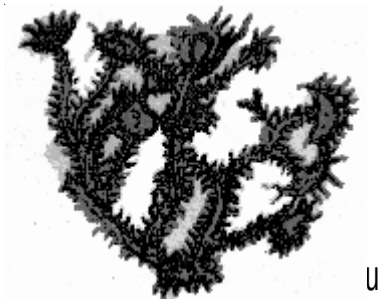


Jnse[

pte - 5 . 6

5 . 5 . 2 . 1 **Jelujom punurr -**

Cemezw punurr ko mvn` koa ce f u,yru yxke koko jerao f iza koa.Vn ko f o jelujom punurr ko mv;a koa.Mu;a lvkn punurr mezd vn kn punurr ;na.Nvna rvz` p ;h bo f ol k;v yru yxke sb rv lga[e[a.Vma kn pte 5 . 7 nvl k;v pv atkr f \ez`.P ;h bo f ol k;v mezd mu;a ce gute lvka reka kno' a`.Vna rvz` aa pa f o mezd f napl ;v f pla kno` a`.Nvn p ;h lvkn p ;h rv ben f erm jle lvkn vsupur` geneix ko mvn`. Gute lvkn p ;h be;r ;v yru ko bolozn rv hndvd lvkn p ;h VV ;v hndvdo` a` ar vn yru f o vnbe;ar rv` kvsvdo` a`.Vn be f erm jle lvkn` rv pra ptu k;v vn yru` gov f \asw rv[gao` a`.Vn mu;az ;vz` yupud rse yru kv` lsur soza rv[gh za. Nvn gute nu`nu` lvkn bo f ar ko` bi f i ;n rvzo gv V'' nitrojvn rvz` goroj f o vn yru yxke ko;` z;v` nmvza.



u

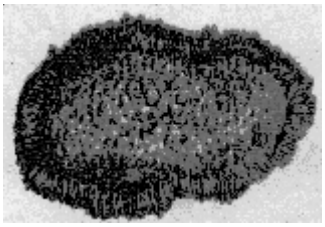
5 . 5 . 3 Apsul f vpv[ga

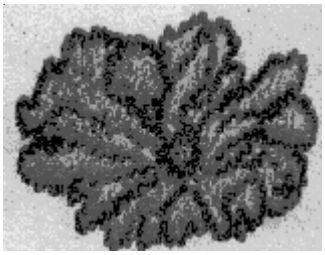
Cemezw lvka jey koa` anasul ar jenei nw ju\e g;e k;v ko ;ina.Cezw ydtul ar hol[ jey ko punurr koa` rvvd svw f vd korv ko tiza kno` a`.Punurr

f o ydtul ar hol[jey lvka jeneid ar tnzvd` vma kakoa. Ydtul ar hol[ jey koa` f v[ga ;v o;v;v f `a, aasul ;vz` ko nmvza. Nekua` jeneid sgi rvgv ; i na.

Apv nw kruid - 5 . 7

Mezd muge caxoa kn kunde ;v muge f aru vsu husezr ;v ;ye lvv pv, jvmo aloka todo ca vn f aru rvz` buta nvlv pv. Celeka pv nvl kvda olv pv. Asul f vpv[ga koz;v f o l ikvn mezd vnkn`. Nvnrv g f vld ar ydtul ken` f vpv[ga jeneid nmo` a`. G f vld kv f o ydtul f v[gaza ar k f an bulu[ f `a vmn` koogv. G f vld rvz` jpn f o ydtul ;v hoba na. G f vld f v[ga rua rv mrxl povd k;v nwom ydtul kv` vmiza.





pte - 5 .8 vsu rokom g f vld ko

G f vld rvzo nvlvkn jeneid gv mvn`. G f vld vnkn p;h pu;uy ;vz` ydtul loo` f vpv[ga jeneid gv mvn`. G f vld kv ydtul dv[gi za, ar nwom lvka ;v k f an bulu[ar f `a nmiza. G f vld f v[ga yra rv mrxl povdnm nwom ytul kv` vm yrai za. Pur` f o buru ber logr g\a korv g f vld ko nmo` a`.

5 . 6 **Jey jneid -**

Jey ko f o apn apen nwom ko kako bi joma. Vnmvn nekuvt` punurr ar jey ko c;n rvko kukud na. Vn mn nwom korv rokom rokom bni bo f ar, l ;el bo f ar, nu`nu` bo f ar ar jeneid bo f ar ko jey ko rokom rokom ypud rse ;v ko sbr mulee za. Cnb f o vn nwom ko f o homoh bni ar benerr pni rvko

aguiza.Jey ko sbvn rokom tzvd rvko t i na.Vna ;v akoa` jomnuy svbvzo i pm gvza.Vlabu jey koa` jom nuy svbv kobu nvl cergl lvka`.

5 . 6 .1 **Jom nuy svbv**

Kute mule rv mvn` jezu koa` jom nuy svbv cvn` mexa lvka pv y\u` lvka ;na.Sbvn koa` cvn` abu lvka f ta, aa,lv` v vmn mvn`? Jey koa` ;nga f p i jomnuy svbv mvn`. : ra f o ;gov kvv ;vko jomv rv f o mra f o ct` kvv;v j l k;v ko jomvza ondo ;ra f o lejum k;v karv yd k;v, jvmbvd k;v ko jomv za. Jey koa` jomnuy mexa y\u` lvka ka mr f a ar nvn p\a rvbu reka ;a`.

P|A - 5 . 2

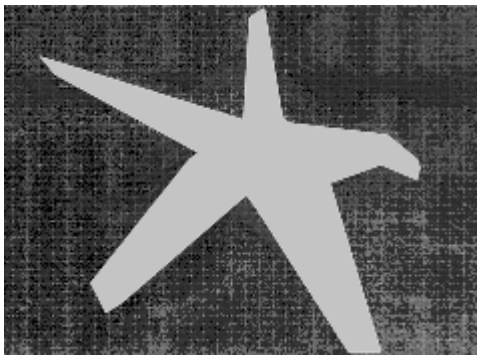
Jey ko rokom jneid svbv

;ene` awka	Jey koa` numu	Jomvgeneix	Celek` jooma
1	mue		
2	Sekew`		
3	Rook		
4	Seku		
5	Ko`		
6	Fu f ulum		
8	belvv		
9	Hku		
10	Rece		
11	Pmp l l		
12	Vrv oz		
13	Fe f e		

A f a nce pv?

I pel hkua` nwom f o hobao` ;na gvnda ar rokov.Akoa` lv;vh jeluan homoh f o mezd mota kvtv` cok` ;v kvsvda kno` a`.Vn cok` f o kvl sezm krbonvt

;v biza kna. Gvnda ar rokov ko ceme;w cok`z ;v ko oll'`, ime;w ipell hku V'`mnde lie bhr pa ;v oll kvv ;v vnko a`z;vv jelu` jom koa.



Pte- 5.8 lpel hi

5.7 **Jom a f vr okoa / jomjerao -**

Abu aa hora bu jomv ;na,jerao zn cnb bndra ko(i`e) lvka ;v i`e g\a hora oll v\`a`.Nvn;` rv abu bu onmnv ;na ce aa ;` z ;v ie kaka jo[mezd t[g` lie pota mvn`.Nvna gv cara pota ko mv;`. Abu okon nwom ce cara B jom a f vr kvv rv pota rv bugen ;vz` ko ;aked ruan ;v bndra ko f o ie lvka ;v svno v\`a.Jom` lvka ;vbu jom lvv ;na ie lvka ;v oll v\` ;na,nvn bo f olo` ;vz` gvko mv;` jomjerao f o. Jom jerao pite purz lgvd cra pota rv ;nga f pi okoa ko mvn` pte- 5.9 rv biza kn lvka mvn`.Jvmon (1)A ace ydtoa`,(2)cara li`,(3)ykud,(4)deonvdom(5);undu lie(6)rbua lie f`a lie ar (7)ie kahkah vmn.Jom jerao pite rv cara lie loo` ondo` cemezw mvn`vnako pite f v[ga rvkoa,jvmon iem, tente,pei;e ko vmn. Vlabu l;ar rv biza kn pte rv bu nvl yrumvza.



(pte- 5.9 jom jerao okoa)

5.7.1 **Aa ar ydtoa`-**

Aamvn lvv rv fo, fata, lv'v, gendu, relw ko soomjaoa. Aa be;r rv fata mvn`. Fata mu;ed nwom ce jom` ko ;gov gunda k;v lupu` za. Aa rv 32 za fata ;ina. Fata koa` bni lvka ;v pite ko ;nga fpiza. **Apv nw kruid 5.8-** :ei ;pv buge ;v abu[spz pv. Nvpvl nvlvn pv ar lvkzpv cemezw fata ;v pvza. Mu;ed fata rvz' celek` nvlv pv. Mezd ;zar karv ambaru; hua` k;v jom lvka pv. Nvlvpv okon fata kvc`rv, okon fata bnde` rv, okon fata ;gov gunda rv fvga ;na, vna ko l;ar p\a rv ol ;a pv.

P\a - 5.3

Rokom fata koa` pnite

;ene` awka	Celekn fata	Fata rvz` awka		Sbvnrv
		L;ar gendu	Cv;n gendu	
1	Hua`			
2	Bnde`			
3	Kvc`			
4	;gov			
5	Lupu`			

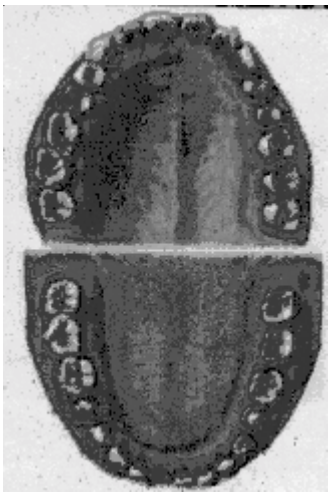
Apv nw kruid - 5.9

Apv medo, hon, medosvpvd, medo bu\a hoa` fata lvki pv. Okoz` cempezw ar okolvkn fata ko mvn`? Oa` pa rvn yre`, mvrom, sv;a, mende koa` fata jom ;n rvko nvl kopv. celekn bvpv[gvn ko ;orw mvn`?

A fanace pv?

* Mnme koa` fo br fay fata olla. Hu\e[rv okon fata olla vna fo ;oa fata ko mv;`. Apv phmv ;ngvza pv ;orw br apvv bara rvpv p\ao fepelw fata ko mexa rpud lvna. Vn rvgv ondo` mexa pv fata yra kna. Nvna mexa

rpudvzn rv f o ondo` f o ka o l l rua`. Bu\a bu\e zn rv karv re[gud ko jom kvv rv ondo‘ f o kbu f atayrao` a`.



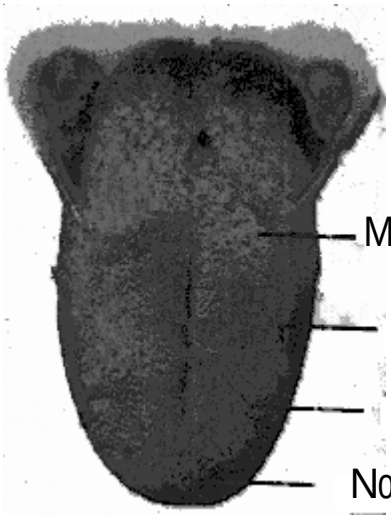
Pte - 5 .10
f ata ko gv;v gv;v mvn`

Jom svka kvv ;v cvkn rvz` f ata ar aabu abu[ spna? Ju f e f ta ar aa kv kbu spa za vn rv f o bktvreza ko abu aa be;ar f ata rv juleza kn jom` ko soza ice k;v njomv` biza.Vna f ata kv` po f oga ar hvlv` cba za.Cnb f obu mvnvza re[gud jom kedeqa.Teeken somz rv jo f e kabu rvvd irena vn rv f o, f ata hsubua vsubu f uku rv[gah o` a`.Cokolvt,ssah f `a,nogod vmn` ko nvn rga bie ko f o.Vna ;v abu krkd karv bros ;v se[gerv br f y krka dvn ;v hobao`.Jomsvka zn ;v buge lvka aa ar f ata bu hu;um spa ;orsz vsu goroja. Fata loo` ;v aa be;r rv lv`v zo ;i na,lv`v l;ar rv yle f ` seer ko mvn`.Nvn yle f ` gv nwom rv mvn` nu`nu` bo f aran jom` ko jerao rv f v[ga za.Ydtoa` be;ar rv lv`v rvz` buta f o.Nvna lvvm jelu ;v biza kn;v gota mule bendu bezurvna.Nvna aa z ;v smnw pa ;v roo l l no` f iz`.Abu jo;n nwom kv nvpa ;vrpa k;v jom` ko ;nagov rv` hunde jp` za.Lv`v ka rv f o ka bu jgr f iza honw.Lv`v l;arv ;vz` yle f ` jom` ko ydv lgvdv f v[gz ;na.Vna ;vgv jom` rvz` sebel kobu a f a f i ;na.Jom` ko aa ;`az ;v be;r ;v yd kvv ;v l ie pota lvka ;v ykud rv bvta na.

Apv nw kruid - 5 .10

: ei abu[k;v mrwgnda ar cundul gnda ;v lv`v sb k;v ora ka pv,vn ;v ju\e kolo` jpagr lvka no` pv , celeka ;orw hobana cergalvpv? Mexa mexa hor bor jom` ko jomv f epelw ju f e bu l n f aza karv jgara vnrv f o su sura karv ku ku`a`.Cnb f obu mvnvza nwom boo` zna.Vn;v cnb f o hon ko f o ;udka rvbu gel koa.Cvn` ;orw hobn ;na joka y\u` mule k;v kei pvce?

Abua` ydtoa` ;`rv breza seer ken jp` jp` ;ina. Mezd fo aaz;v yku ar mezd fo mutz ;v borkod ;v svna kna.Nvna fo xzd seer bu mv;`.Hozo svno` fepelw nwom seer kv glotes mvn ;vz` bon foz ;v vna hoka ;e[a.Vn lvka gv nwom ko svno` fepelw ko gv xzd seer kv bon fo na .Ju fe ja mvn ;v nwom hozo seer be;r rv bolo zna,Vn fobu ku`y` a`.Mvd mutz ;v f`a gv oll ;ba.Vna ;v joom ime;a joka husezr ;v jomv ;vz‘ kje.Vna;v sua sua ;v jomv goroj ;na.Naw` fobu nvlvza lv`v celeka sebel ko` cka irebu ;na?Lv`v cemezw noogod ytul (soa fo muku\o) mvn`.Pte - 5 .11 rv nvlvpv vna ko okon okon korv mvn`?



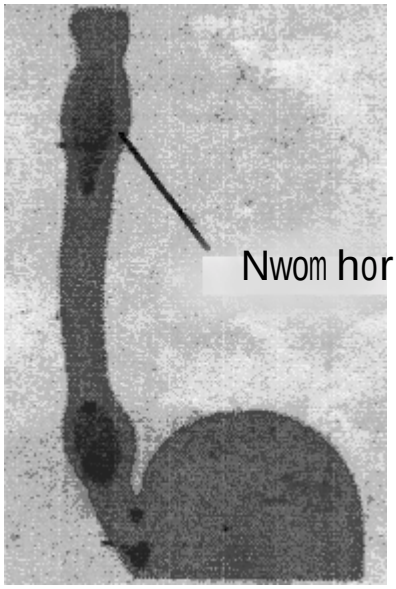
Lv`v ;v sebel cergl

Apv nw kruid - 5 .11

* Baroo ju\eke[smanw f parom f ub kke[.
* Ypuneza doa` rv rokom rokom lvzw bi k;v rekz pv(cene f`a, lembu f`a, bulu[ f`a, ar krla f`a)
* Ypuneza b;are jta agui pv. Lvzw mu;ed mepezd jta hoob ;a pv.
* Apvz` ju\e kv lv`v oll v lgvd kjezai pv.
* Apv vn jta ;v mu;ed lvzw med tvb lv‘v ;la rv ar ;ra fo lv`v vn;` nvn ;` pte - 5 .11 rv lvka tvb ;a pv.
* Apvz` ju\e kv kule cergale pv ce okon ;` rv sebel, okon ;` rv mvvr, ar okon ;` rv morov gv` atkr kvda.
* Naw` fo apvz` onol pu;erv ol rekz pv .
* Apvz` ju\e kv kjezai pv rokom lvzw r` tvb ko tvb jom lgvd ,nvlv kn sebel cergl be\y ju\e kolo` ;v bi ondo` z pv ar cerglv pv.

5.7.2 **Nwom pota-**

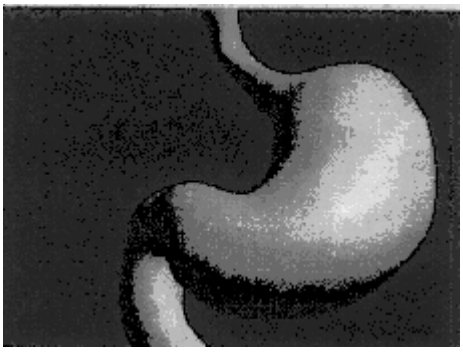
Nwom pota hora ;vjom` koce nwom ko be;r p;v boloa.Nwom pota rvz` lele[ar fu[guen ;vjom` ko be;r pa ;v sokova fvrvna. Mexa mexa yku lie rvosube fakohobaznkorv, nwomykulie korvka ;iznn ;vvn lie pota hora ;vyla lvka ;v oll rua`.Apv ju fe mexa lvka pvylakdavn rv foondo` mexay\u` lvka pv.Cvn` rvz` buylao` a` ;orw? Ju fe yku lie korv hozo pvrv` a` kno` a` vn rv fo buylao` a`.Hozo ;v nwom kocv;n ;vyla lvka hesb ;vy furollvna.



Pte - 5.12 Nwom hora

5.7.3 **Yku lie-**

Pte- 5.13 kv nvlv pv.Nwom pota rvz` mucd pa fojele[ liekomv;`.Yku lie celeka nvlo` ;na(pte- 5.13) nvna mezd gundra lvka bizakna.Lie pota rvz` sbvn koz ;v osr ;vz` fo vn yku lie.Yku lie rvz` be;r pa kute genel rv vsu rokom seer hora ;v jarao rse jvmon,njom bulu[, ar yle f` ko jorona.Njom bulu; nwom rvn bvktvreza ko lsur koa ar jarao rse jom` ko` jerao za. Jarao rse nwom rvz` nu`nu` bo far ko sbar i feza.Yku lie rvz` l;ar pa fo ;undu lie,pie ;e ;v pie;e rse joro k;v ;undu lie rv nwom kolo` mexa na,vn pei;e rse fomzom surr rv bi k;v pei;e rse lvka ;v ;izakno` a`.Nvn pei;ezo nwom rv ;in i;el ko‘ jerao za.



Pte - 5.13 Yku lie

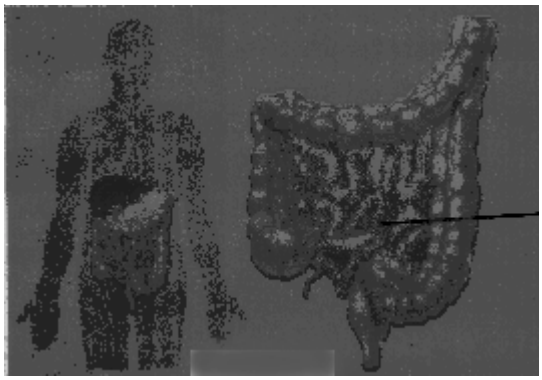
A fanacepv?

Nwom korv ju fe hu\e[lvka myra ko mvn` rv fo,vna lsurv pite fo mzom surr gv ;na.Apv mvnv ;na jom` rv myra celeka ;v ;orw huju` a`? Nvladabu kube rv ce fu ko alo ko ce fui ka mvn;v myra bu pvckarv ;na.Pvckr k;v 14 mh cnb vnw jomv ;vz` kje,cvn` ce ime;a fo myra ko otwakno` a`.Mvn fo se;ezr ko lubeza ;v 4,5 ma korvgv akare[v ;v haato` i fei ;na.Vna ko kere[k;vbu jomv ;na, vnka ;v homoh ;v myra ko bolo ;na.

A fanbu yku lie be;r fo cvkn pite ko hobn ;na,okoz nvl azr lvda? Msm; 1882 xerm'` kje alvkses svnt mrtek numu ;vn medo hoa` kuam rv gule ;v` to` lvna.Vn gule kuam be;r ;v ;b k;v yku lie jkv` pu;uy lvda. Aken bugen ken lgvd amvreka rvn rvpv\v` dk;or yi lezm bzumont ;ekeq ;` ;v ko i fe lvd kena.Dk;or ken bugen ke` a ken mvn fo ykurvz` pu;uy fo kken bugen ke` ;v ptuvsvd lvda ken. Ime;w dk;or bzumont kv yku lie be;ar rv cvn` ko cekao` ;na vn yndu hora nvlv ;vz` ;ahko keq nm kvda.Nvl kvda keq ykurvz` nwom ko lupu` y` ;na, ar be;r genelvv ;v jarao rse heqje ;na,vna ;v jom` ko jeraon ;na.Ondo` gv jerao zn cnb vnw jele[lie pa ;v svno` ;na.

5.7.4 **Jele[lie**

Pte- 5.14 kv nvlv pv.Lie pota rvz` sbvn koz ;v jele[ ;vz' ;na,okona ptu bezur bezur k;v ;ina.Vna rvz` jele[vnka;v ;orw 7.5 metor lvka hobao` a`.Nvn jele[lie rvz` cv;n munde fo mzom surr ko mv;`.Azr ;vbu a fasvkanace,pei;e loo` ;v mzom

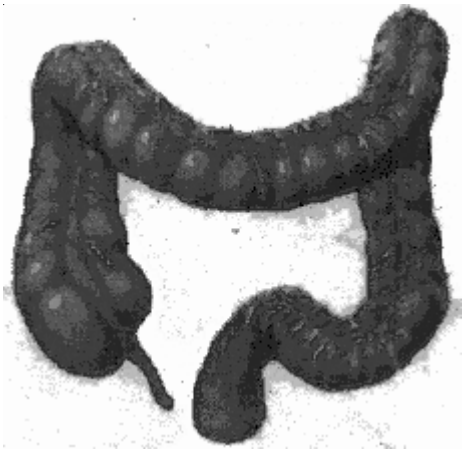


Pte- 5.14 **Jele[lie**

surr juleza kno`a`. Vnlvka gvyku lie rvz` l;ar pa rvmezddmpumvn`vna fo tente(ogna soz)bumv;`.Nvn pte nvlv pvvn tente celeka ar okon rv mvn` nvlvpv?Tentei ;v rse joro k;v jele[lie rvmexana.Nwom rvmvn` nu` nu` bo far,i;el bo far ar bni bo far ko vmn tente rv sbaro`a`. (pte-5.14) Jele[ lie rvz` mucd pa ;v aaw fun lgvd sbvn rokom nwom ko jerao cba kno`a`.Jvmon nogod`(glukoj), nu` nu` bo far, i;el bo far ko i;el njom (fate acid) ar glesvrol ar bni bo far - vmeno vsed rv plta kno`a`.Jeraoa kn nwom bo far jele[ pota ;v srubvna.Vn jele[ lie rvz` be;rgenel gnda ko lvka cv;n ;v p\uba kano`a`.Vna ko fo ytukul(villi) ko mv;`.Vn rv cemezw mzom sv;v[ seer ko mvn`.Ytukul rvmvn` mzom sv;v[ seer nwomvv ;v bo far ko` jvmbvdvza.Ytukulv ;v mzom sv;v[seer ;v gota homoh ne;ervna.Nva fo mzom ne;er kruid ko mv;`.Homoh rvz` rokom kon fol korv, glukoj,je fan loo` mexa k;v noll ar f`ako ;ezrvza, ar vnz ;vgv pv\v`ko fooll'`. Okon nwom nvn jele[lie rv kajerao zna ce ka sor zna vna fo rbua lie pa ;v svno`a`.

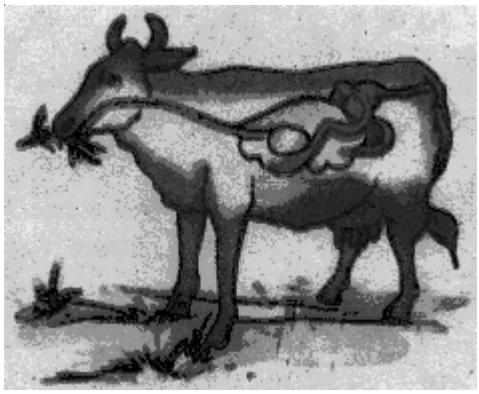
5.7.5 RBUA LIE

Jele[lie rvz` mucd pa fo rbua lie loo` koqja kno`a`.Rbua lie rvz` ;undu fo i`kakah ko mv;`.Nvna jele[ liee ;v fo fu[gue za mvn foosr la`a`.Vnka ;v nvna 1.5 metor lvka jele[a. Nvn rbua lie rvz` be;r kute fo nwom korvz` ie pz ;v f`a ar cemezw bulu[ko sb reka za.Vnz ;v la` ;vz` fo iei lvka ;v oll'` .Vn;` rv vna lv;vh gv ;ina.Cnb fo bu ie v\` za.



Pte 5.15 RBUA LIE

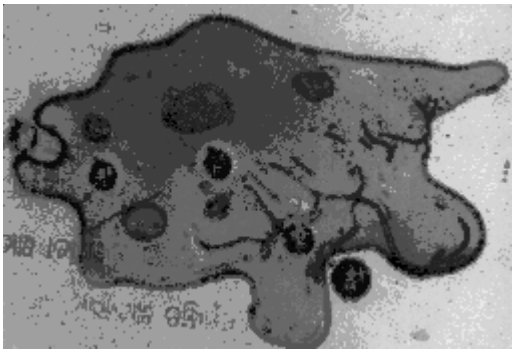
5.8 PUNURR JOM KOA~ JENEID



Pte 5.16 Yre`z`ykulie

Apvjp`korvmvn`;vncemezw punurr jom ka\a ko phm lvka kopv.Jvmon yre`,mvrom,mendevmn.Nvl kopvvnkoge;e`akn rvkolejumvza. A;e[fepelwfojagvjv;akojom;a` cbn fokolejum gunda yra za.Vn punurrkofoykuliervz`cpra(ma[he;d) ;ian;akano`a`.Vn;`rvzojacemezw fojeraono`an;akano`a`.Nvna fo p\apu\unwom(cud)komvnvza.Cnb;vnvnp\apu\unwomkohupu\e[guizn ;vondo`mexaaapa;volIrua`arka\akovnakolejuma.Vna fosepudvko mvnvza.Nekufolejumk\aokomv;akoa.:sdlvknnwomkorvfopur`svlzuloj ;ina.Svlzulojmezdnu`nu`bofarlvkan';na.K\akosvluloj foaqja;v fokkojeraofiz`.pte-5.16 rvnvlvpvjele[lieartbualie;larvmezd mrwbos;alvkan`du[gakna.Vna fosekom(caecum)komv;`.Svluloj mexa kn nwomkocemezw bvktvrezakoloo`;vjerao`a`.Abua`homohrvsekom bno`;vaa`lvknnwomkoaqja;vkbujeraofiza.Cemezwhu\e[jeykolie potao;kobno`a`ceaao;kobno`a`,vnfoceleka;vnwomkojomv;na,ar celekkojeraoz;na?

5.9 AMEBA'~ JENEID



Pte 5.17 AMEBA'~ JENEID

Amebamedomezdkondol jey ;n`.Smamvd;vfokavnvlo` a`.Mvnfonvkopukuref`akorvko ;ina.pte-5.17 rvnvleipvceleka homohfov;w;vz`;v`pu\ua kna.Homohbe;arfomezdmrwduyl nzostemvn`arvsupur`hu\e[hu\e[f`aburbu\e`lvknrsesereb''ko

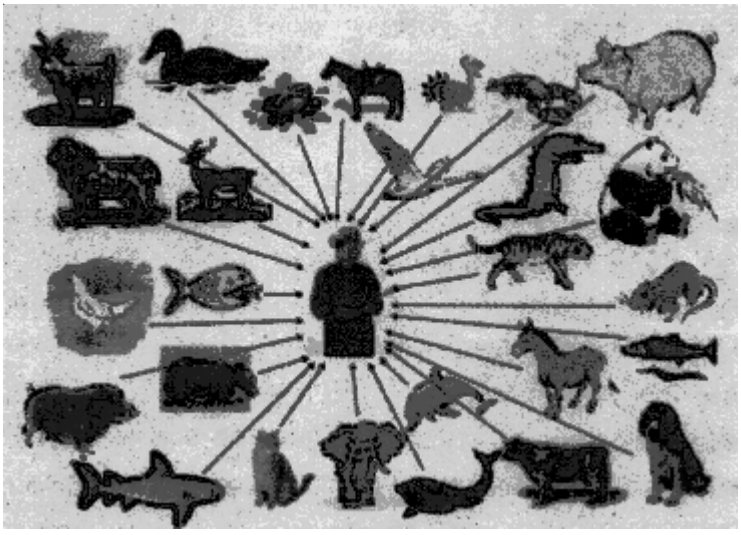
mvn`. Ameba sbv ime;a nejor homoh V bo f olvza.V'` homoh hu\e[k;v breza yku kata oll k;v` svnvza. Ameba hupu\e[ce f u honko` joma.Nei vsu ;nga rv[ga'` jom koa.Jom` ko` nvl kvv korvgv homoh z ;v breza yku kta ken oll ;b kvv ;v kta ;v` ;vga ;opa ;b ko;v homoh be;r ;v` a f vr koa.Nvn nwom ko homoh rvz` rse sereb ;vz` rv` ;ina.Rse sereb ;vz` z ;v jarao rse heqje k;v nwom ko jerao` a` ce jom` ko sbaro` a`. Vnka ;v V'` anasul hobana.Nvlvka nwom ko ;kvrvn ;v homoh bni hoba na. Ondo` mexa vn rse seereb rv mvn` nwom rvz` kz ko homoh rvz` ja hora gv oll v\` a`.

Cvn` pv v;o kvda?

* Jey homoh bni ar ;v[o ar p ite nw pvv` goroja.
* Jom nuy, homoh rv jenerao, sereb / anasul ar brgel nwom ko r` oll v\` z ;vz` vman` p ite kogv medvrv jeneid bu mvnvza.
* Jey koa` jeneid nw goroj ;vz` ko f o jeid'` ko mv;`.
* G f vd punurr ko p;h rvz` g f vd pu;uy ;v jvtvv ;v pvv` ;usw k;v f `a ar noll mexa k;v nu` nu` bo f ar ko biza.Nvn p ite f o mrxl pozvd ko mvnvza.
* Sumw g f vd pu;uy mvn` punurr kogv nvlv ka ;v nwom ko bi f i ;n ;v nvko f o nmjom koko mv;a koa.G f vd pu;uy bno` punurr ce jey ko ko f o sbvn kanm f i koko mv;a koa.
* Kanm f iko be;arvv ;v parasits ar m]a ce soza jom ko.
* Mu;a lvkn jelu jom punurr f o nmjom ;n rvzo gv` n itrojvn mexa nwom vn ce f u koz ;v` nmv ;na.
* Jey - punurr, ar punurr - punurr be;r rv jeneid f vv[ga ka ;v ko jeneida.
* Jey koa` jeneid mvnvrv jey koa jeid'` rvz` goroj, jom svbv, ar homoh rv vna rvz` tnzvgv ;na.
* Mnoa koa` jom a f vr hora rv l ie pota ar jarao seer koa` p ite ko pur`. Jom a f vrv pota rvz` numu ([) aa (g) Ydtoa`(k) yku l ie (q) jele[ l ie (j) Rbua l ie(c) l `e l ie (]) l `kakah rv mvn` seer ko - 1. boor

seer. 2 kunu` rv mvn` pei ;e. 3 tente 4.yku lie ar jele[lie be;rvv ;v joron jarao rse.

* Jey koa` jom nu svbv ipm gvza.
* Jeneid mezd ka sbr pnite okon rv ([)jom a f vr(g)jerao(k)Nwom bo f ar korvz` sereb(q)anasul(j) bhr paz ;vz` pite ko vmn svll'` kna.
* Aa rv nu`nu` bo f ar, ykulie rv bnibo f ar lvkan` ko jerao` a`. Jele[ lie rv mzom surrv mvn` pei ;e ;vz` pei ;e rse, tente rv joron jarao rse, ykulie ar jele[ lie rvz` be;ar pu\uaz ;v hewje jarao rse ko mexa k;v sbvn nwom koko jerao za.
* Jele[lie rv jeraoa kn - nwom bo f ar mzom seer ko;v serebvna.
* Jele[pota rv srbudv zn nwom bo f ar homoh rvz` gota mule svsvna. F`a ar cemen rokom bulu[ko f o rbua lie srbudvna.
* Ka jerao zn nwom rvz` kz ko i` kkah hora bhr pa lvka ;v oll'`.
* Punurr jom jey ko jvmon - Yre`, kv\a, mvrom, mende, seleb lvkn ko f o lejumv ce sepudv koko mv;a koa.Vnko f o aqja aqja nwom ko yd k;v cpra ce sekom rvko reka ;a`.Ge;e` f epelw ondo` mexa oll rua k;v ko lejumvza.
* Ameba medo mezd kon f ol jey.V V'` yku kata ken oll ;b kvv ;v homoh rvz` jarao seer be;r ;v` a f vrvza.Vn be;r rv vna jerao` a`.Homoh rvz` jahora gv vna ie` lvka ;v oll v\`a`.



INE:U{

1. Abu jomv ;n nwom rvz` mu;e ko f o cn` cvn`?
2. Jey sokoa p i te lgvd pvv` sewge ;`az ;v gv nmv ;na.Celeka ;v ar okolvka ;v jgr saarv pv?
3. Nmjom ;ne` kanmjom ;ne` mu;ed 3 za kvv;v ynu f ub rekz pv.
4. Mnoa kv apv nmjome`,kanmjome`,prasits,soza jomne` vna koz ;v okon na rvpv lvka mexaiza ar cvn` rvz` kjei pv?
5. Apvz` onol pu;e rv l;ar no;or p\a bi k;v pvrv` v pv.

	Ka nmjome`	Soza jome`	Jeneid f vv[ga ne`	
Okone` ko mv;iza?				
ynu f ub				
Okonvv;v nwom ko nmvza.				

6. Sbvn` ko lgvd mepezd ynu f ub rekz pv.
   [. medo nm f i ar ka nm f i ;n punurr f o-
   g. Nitrojvn hozo jp` rv dhle lvkn punurr ko f vv[ga ;n hol[jey-
   k. Sewge'` jvtvv ;v pv\v` ;usw ;vz` p;h rvz`-

7. Mvn` xb f koz ;vgv teek ;vz` ;v p[ka ko pvrv` v pv.
   [. Ce f u ko joom ;n punurr f o——— (jnse[,g f vld,mu;a f aru,yd)
   g. G f vld ar ydtul be;r rv jeneid f vv[ga f o———rv nvlo` a`.
   (by,dhle lvkan`, pvnselen,g f vd)

8. P;h rv nu`nu` bo f ar bni lgvd okona ko f orkara l;ar numu lvkaz ;v oarv pv. Hozo, nitrojvn, f `a, proten, noll, jvtv ar je f an.

9. L;ar rv homoh rvz` rokom numu ko ola kna. Jom` jom kvvrv okolvka ;v svno` a` olvpv? ykulie, jele[lie, liepota, jom` pota, ydtoa`, rbua lie, mzom surr, f ubui, aa, ie`kakah.

10. P[ka ko pvrv` ;a pv.
    [. Lie pota rvz` sbvn koz ;v mrw ;vz` f o —ko mv;`.
    g. Lie pota rvz` sbvn koz ;v jele[ ;vz` f o—ko mv;`.
    k. Yku liee ;v——, ———, ar——rse hewqjeza.
    q. : undu lie rvz` be;r pa rv gnda lvlvka nvlo` yte f o——ko mv;`.
    j. Ameba'` jerao pnite ——rv hobana.

11. Mu;ed kono` rvz` hnl mozd karv reza bkawrv hlv pv.
    [. Pei;e rse okonvv ;v hewqjena? Nvna celekn nwom ko jerao rv` f vv[g`.
    g. Mondo rvn honko inu[b f a b f e ko rv f o glukoj ko vma koa cvn` rvz`?
    k. Aa` aqja kajerao` a` ko mvnvza, cvn` rvz`?
    q. Tente okon rv tina?vna rvz` pite cn`?

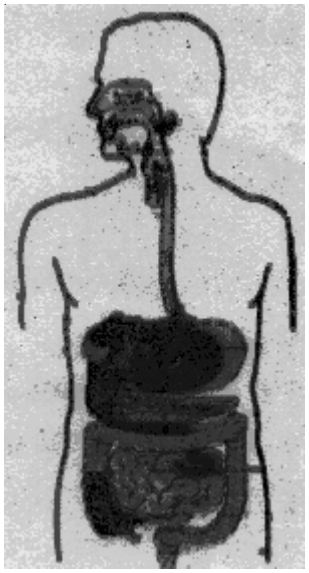
12. '{' sri ar 'G' sri ken rv bu sgi medvza.

'{'sri	'G'sri
Yle f ` seer	jerao rse
Ykulie	f `a srub
Tente	jerao mucd
Jele[lie	bndra ko onoll
Rbua lie	pei;e rse hewje
	Yle f ` joro

13. Homoh rvz` okon tzvd korv nvn mn nwom ko jerao` a` olv pv.

* Nu`nu` nwom————————
* Bni nwom————————
* I;el nwom————————-
* Snm nwom bo f ar——-—

14. Lie rvz` rokom tzvd r` numu ko pterv i[gulvpv.



Jom nuy hora

15. Nvna f o cvn` cvn`?

[. Jerao` ;vz`.
g. Jom a f vr.
k. Anasul.q.nwom ko oll.
j. :oa f ata.
c. Lejum.

16. Kjei pv cvn` rvz`?

[. Jomsvkazn cnb aa ar f ata bu spaza.
. Jom ;n korv kbu jgara.

k. Mnme ko svluloj lvkn nwom ko aqja ;v kav jerao f iz`.
q. J\ao` ;ne` kv ka nvlbge ;vz`.
j. Jom` ko suzsuz ;v ;gov k;v bu jomvza.

17. Mnme homoh rv ju f e tente ka ;i na vn f o cvn` hobao` a`?

O\` rvz` kuruid ko

* Nogod jolvne`(diabetces)nw nwom ko rvz` numu lvka bie pv.
* Fata hsue kv bu f ezi pv.
* Lga cbakne` kv s lingu;ui ;vz` rvz` jgaree pv.
* Fulj\ao` rv f o pv cvn` pv ceka za? Cvn` rvz` hobn ;na kule jom pv.

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